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A List of Species of the smaller herbaceous Genera of North American Saxifragaceae.

By Wm. E. Wheelock.

In studying the herbaceous North American Saxifragaceae, it has seemed desirable to present a preliminary enumeration of the species, with their synonymy and distribution as known to me at the present time, with a view of eliciting comment and to request additional material for examination. The species of *Saxifraga* will be enumerated by Dr. Small in a subsequent contribution.

The genera have been taken up in the sequence adopted by Professor Engler, in Engler und Prantl's "Naturliche Pflanzenfamilien," and I find myself able to agree with him in most of his generic limitations.

The following key will serve to indicate these limitations.

The synonymy is given only for those species not enumerated in the "List of Pteridophyta and Spermatophyta of Northeastern North America," Mem. Torr. Club, 5: 177–180. 1894.

Staminodia wanting.

Large herbs with 3-ternate leaves and polygamous flowers. 1. Astilbe.

Herbs with simple cleft lobed or 3-foliolate leaves and perfect flowers.

Leaves coriaceous; carpels distinct. 2. Leptarrhena.

Leaves membranous, coriaceous or fleshy, carpels more or less united at the base.

Placentae axial.

Ovary superior or nearly so.

Stamens five. 3. Bolandra.

Stamens ten.

Calyx five-toothed, stamens inserted just under the sinuses. 4. JEPSONIA.
Calyx five-cleft or five-parted, stamens inserted under the ovary. 5. SAXIFRAGA.
Ovary not superior, more or less adnate to the calyx-tube.
Petals mostly deciduous; stamens five or ten; seeds ovoid, rough. 6. THEROFON.
Petals persistent.
Stamens five. 7. SULLIVANTIA.
Stamens ten.
Leaves not peltate.
Petals at length deflexed; leaves papery-membranous, the blade obscurely articulated to the petiole. 8. SAXIFRAGOPSIS.
Petals not deflexed; leaves coriaceous or fleshy, the blade more or less decurrent. 5. SAXIFRAGA.
Leaves peltate. 9. PELTIPHYLLUM.
Ovary almost entirely inferior; stamens five. 10. HEMIEVA.
Placentae almost basal. 11. TIARELLA.
Placentae parietal.
Petals present (except in some species of *Heuchera*).
Plants large, at least several centimeters high.
Petals entire, relatively small.
Stamens five. 12 HEUCHERA.
Stamens three. 13. LEPTAXIS.
Petals variously toothed, cleft, lobed or parted, or if entire relatively large; stamens five or ten.
Capsule beaked.
Corolla regular. 14. TELLIMA.
Corolla often somewhat irregular; petals sometimes entire, the upper often smaller. 15. LITHOPHRAGMA.
Capsule not beaked. 16. MITELLA.
Plants minute, about one centimeter high. 17. LEPUROPETALON.
Petals always wanting. 18. CHRYSOSPLENIUM.
Staminodia present, alternate with the stamens. 19. PARNASSIA.

1. ASTILBE Hamilt.

1. **Astilbe biternata** (Vent.) Britton, Bull. Torr. Club, **20**: 475. 1893.
Mountains of Virginia and Kentucky to Georgia and Tennessee.

1*a*. **Astilbe biternata crenatiloba** (Britton).

Astilbe decandra var. *crenatiloba* Britton, Bull. Torr. Club, **15**: 98. 1888.

This plant has been seen only from the original station on the slope of Roan Mountain, East Tennessee.

2. LEPTARRHENA R. Br. in Parry's 1st Voy. Suppl. cclxxiii. 1824.

1. **Leptarrhena amplexifolia** (Sternb.) Ser. in DC. Prodr. 4: 48. 1830.

Saxifraga amplexifolia Sternb. Rev. Sax. Suppl. 2. *pl. 2.* 1822.
Saxifraga pyrolifolia D. Don, Trans. Linn. Soc. 13: 389. 1822.
Leptarrhena pyrolifolia Ser. in DC. Prodr. 4: 48. 1830.
Alaska to British Columbia and Washington.

I have followed Mr. Jackson in "Index Kewensis," in giving priority to the specific name *amplexifolia* over *pyrolifolia.*

3. BOLANDRA A. Gray, Proc. Am. Acad. 7: 341. 1868.

1. **Bolandra Californica** A. Gray, Proc. Am. Acad. 7: 341. 1868.
California to Oregon.
2. **Bolandra Oregana** S. Wats. Proc. Am. Acad. 14: 292. 1879
Oregon, Washington.

4. JEPSONIA Small, Bull. Torr. Club, 23: 18. 1896.

Leaves sub-orbicular, broader than long; calyx-teeth shorter than the tube.
1. J. PARRYI.
Leaves ovate-orbicular, longer than broad; calyx-teeth as long as the tube, or longer.
2. J. MALVAEFOLIA.

1. **Jepsonia Parryi** (Torr.) Small, Bull. Torr. Club, 23: 18. 1896.
Saxifraga Parryi Torr. Bot. Mex. Bound. Surv. 69. *pl. 25.* 1859.
Middle and southern California.
2. **Jepsonia malvaefolia** (Greene) Small, Bull. Torr. Club, 23: 19. 1896.
Saxifaga malvaefolia Greene, Bull. Torr. Club, 19: 121. 1882.
Santa Rosa Island and Santa Cruz Island.

6. THEROFON Raf.

Stamens 5.
Stipules wanting, or represented by bristles.
Leaves 3–7-lobed or 3–7-cleft.
East American species. 1. *T. aconitifolium.*
West American species. 2. *T. elatum.*
Leaves crenate-dentate or incised.
Petals small, hardly longer than calyx-teeth; Californian species. 3. *T. rotundifolium.*
Petals relatively large; arctic species. 4. *T. Richardsoni.*
Stipules present, often foliaceous and conspicuous. 5. *T. majus.*
Stamens 10. 6. *T. Jamesii.*

1. **Therofon aconitifolium** (Nutt.) Millsp. Bull. West Va. Agric. Exp. Sta. **2**: 361. 1892.

Virginia to Tennessee and Georgia.

2. **Therofon elatum** (Nutt.) Greene, Man. 121. 1894.

Saxifraga elata Nutt.; T. & G. Fl. N. A. 1: 575. 1840.
Boykinia occidentalis T. & G. Fl. N. A. 1: 577. 1840.
Boykinia elata Greene, Fl. Francis. 190. 1891.
Boykima Nuttallii J. M. Macoun, Can. Rec. Sci. 1895.
British Columbia to southern California.

The plant for which Mr. J. M. Macoun suggests the name *Boykinia Nutallii* does not seem to us sufficiently distinct from *B. occidentalis* T. & G. We have the form to which Mr. Macoun evidently refers even from Santa Cruz, California, but hardly hirsute. We must consider, that Mr. Nuttall was describing a *Saxifraga* when he wrote "a very remarkable robust species."

3. **Therofon rotundifolium** (Parry).

Boykinia rotundifolia Parry; A. Gray, Proc. Am. Acad. **13**: 371. 1878.
Southern California.

4. **Therofon Richardsoni** (Hook.).

Saxifraga Richardsonii Hook. Fl. Bor. Am. 1: 247. 1833.
Saxifraga Nelsoniana Hook. & Arn. Bot. Beechey, 124. *pl. 29.* 1832. Not D. Don. 1822.
Hemieva Richardsoni Raf. Fl. Tell. 2: 70. 1836.
Boykinia Richardsoni A. Gray, Bot. Cal. 1: 196. 1876.
Arctic America.

5. **Therofon majus** (A. Gray).

Boykinia occidentalis var. *elata* A. Gray, Proc. Am. Acad. **8**: 383, name only. 1872. Not *Saxifraga elata* Nutt. 1840.
Boykinia major A. Gray, Bot. Cal. 1: 196. 1876.
California to Oregon.

6. **Therofon Jamesii** (Torr.).

Saxifraga Jamesii Torr. Ann. Lyc. N. Y. 2: 204. 1826.
Telesonix Jamesii Raf. Fl. Tell. 2: 69. 1836.
Rocky Mountains, Montana, Dakota.

7. SULLIVANTIA T. & G.

1. **Sullivantia Sullivantii** (T. & G.) Britton, Mem. Torr. Club, **5**: 178. 1894.

Ohio, Indiana, Wisconsin.

2. **Sullivantia Oregana** S. Wats. Proc. Am. Acad. **14**: 292. 1879.

Sullivantia Hapemani Coulter, Bot. Gazette, **17**: 421. 1892.

Oregon, Wyoming.

8. SAXIFRAGOPSIS Small, Bull. Torr. Club, **23**: 20. 1896.

1. **Saxifragopsis fragarioides** (Greene) Small, Bull. Torr. Club, **23**: 20. 1896.

Saxifraga fragarioides Greene, Bull. Torr. Club, **8**: 121. 1881.

High altitudes in the mountains of northern California and southern Oregon.

9. PELTIPHYLLUM Engler, Nat. Pfl. Fam. **3**: Abt. 2, 61. 1891.

1. **Peltiphyllum peltatum** (Torr.) Engl. Nat. Pfl. Fam. **3**: Abt. 2, 61. 1891.

Saxifraga peltata Torr.; Benth. Pl. Hartw. 311. 1849.

In and near the Sierra Nevada, California.

10. HEMIEVA Raf. Fl. Tell. 2: 70. 1836.

[SUKSDORFIA A. Gray, Proc. Am. Acad. **15**: 42. 1879.]

Petals short-clawed.	1. *H. ranunculifolia.*
Petals long-clawed.	2. *H. violacea.*

1. **Hemieva ranunculifolia** (Hook.) Raf. Fl. Tell. 2: 70. 1836.

Saxifraga ranunculifolia Hook. Fl. Bor. Am. 1: 246. *pl. 83.* 1833.

Boykinia ranunculifolia Greene, Fl. Fran. 190. 1891.

Suksdorfia ranunculifolia Engl. in Engl. & Prantl, Nat. Pfl. **3**: 2a, 52. 1891.

British Columbia.

2. **Hemieva violacea** (Raf.).

Suksdorfia violacea A. Gray, Proc. Am. Acad. **15**: 42. 1879.

Washington; Oregon.

11. TIARELLA L.

Stem a scape; or rarely bearing one small leaf. — 1. *T. cordifolia.*
Stem leaf-bearing.
Leaves triangular-cordate. — 2. *T. unifoliata.*
Leaves ternately divided, or trifoliolate. — 3. *T. trifoliata.*

1. Tiarella cordifolia L. Sp. Pl. 405. 1753.

Canada to Alabama.

2. Tiarella unifoliata Hook. Fl. Bor. Am. 1: 238. *pl. 81.* 1833.

Heuchera longipetala Moc. Icon. Fl. Mex. ined. *pl. 423.*
Petalosteira unifolia Raf. Fl. Tell. 2: 74. 1836.
Oregon to British Columbia.

3. Tiarella trifoliata L. Sp. Pl. 406. 1753.

Tiarella stenopetala Presl, Rel. Haenk. 2: 55. 1835.
Blondia trifoliata Raf. Fl. Tell. 2: 75. 1836.
Petalosteira laciniata Raf. l. c. 74. 1836.
Southern Alaska to British Columbia.

3a. Tiarella trifoliata laciniata (Hook.).

Tiarella laciniata Hook. Fl. Bor. Am. 1: 239. *pl. 77.* 1833.
Vancouver Island; Washington.

12. HEUCHERA L.

Since the publication of "A Descriptive List of Species of the Genus *Heuchera*," Bull. Torr. Club, 17: 191–204, 1890, the original specimen on which *H. Curtisii* A. Gray was founded has come to light. I referred this plant, with doubt, to *H. villosa* Michx., but an examination of the type shows that it is to be referred to *H. pubescens* Pursh.

13. LEPTAXIS Raf. Fl. Tell. 2: 75. 1836.

[Tolmiea T. & G. Fl. N. A. 1: 582. 1840. Not Hook. 1834.]

1. Leptaxis Menziesii (Pursh) Raf. Fl. Tell. 2: 76. 1836.

Tiarella Menziesii Pursh, Fl. Am. Sept. 1: 313. 1814.
Heuchera Menziesii Hook. Fl. Bor. Am. 1: 237. *pl. 80.* 1833.
Tolmiea Menziesii T. & G. Fl. N. A. 1: 582. 1840.
British Columbia to Oregon.

14. TELLIMA R. Br. App. Frank. Journ. 765. 1823.

Stamens 10; stems 1½°-2° tall. 1. *T. grandiflora.*
Stamens 5; stems 6'–8' tall. 2. *T. racemosa.*

1. **Tellima grandiflora** (Pursh) Dougl. Bot. Reg. *pl. 1178.* 1828.

Mitella grandiflora Pursh, Fl. Am. Sept. 1: 314. 1814.
Tiarella alternifolia Fisch.; Seringe, DC. Prodr. 4: 50. 1830.
Alaska to California.

Mr. Thos. Howell sends us from the Columbia River, near the Cascades, as *T. odorata*, a plant which we do not find sufficiently distinct from *T. grandiflora*, to maintain as a species.

2. **Tellima racemosa** (S. Wats.) Greene, Erythea, 3: 55. 1895.

Heuchera racemosa S. Wats. Proc. Am. Acad. 20: 365. 1885.
Washington.

In Erythea, 3: 55, Prof. E. L. Greene gives the reasons why, in his judgment, *Heuchera racemosa* S. Watson should be referred to *Tellima*, and in the same volume at page 102, after giving new reasons why he would restore to generic rank the genus *Lithophragma*, refers *Heuchera Williamsii* Eaton, to this latter genus. There certainly seems to be ground for both these positions. With reference to the plant collected by Mr. Williams it is interesting to note that both Mr. Canby and Prof. Eaton referred it to *Tellima* at first, and the latter put the plant finally into *Heuchera* simply because it had entire petals and five stamens. In the Flora of North America, Torrey and Gray, 1: 585, we are told that Mr. Nuttall, in his manuscript notes, called attention to the accordance of *Tellima Cymbalaria* Walp. (*Saxifraga Californica* Nutt. mss.) with *Lithophragma*, while he also noticed the fact that the styles are sometimes two only. This makes it easier for us to refer *Heuchera Williamsii* to *Lithophragma*.

If through the adoption of the arrangement above referred to, we sacrifice a stamen character, we gain by removing from the genus *Heuchera* the only two species that seem to be out of sympathy with the rest through having a purely racemose inflorescence.

15. LITHOPHRAGMA Nutt. Journ. Acad. Phila. 7: 26. 1834.*

Petals deeply palmately 3–7-parted.	
Raceme 3–6-flowered.	1. *L. tenella.*
Raceme 12–20-flowered.	2. *L. rupicola.*
Petals variously cleft or lobed.	
Calyx-tube obconic.	3. *L. parviflora.*
Calyx turbinate.	4. *L. affinis.*
Calyx campanulate.	
Pedicels very short.	5. *L. heterophylla.*
Pedicels about as long as the calyx.	6. *L. tripartita.*
Petals entire, undulate, or minutely toothed.	
Calyx campanulate, with a broad base.	
Pedicels very short.	7. *L. Bolanderi.*
Pedicels about as long as the calyx.	8. *L. scabrella.*
Calyx campanulate, narrowed at the base; stamens 10.	9. *L. Cymbalaria.*
Calyx obconic; stamens 5.	10. *L. Williamsii.*

1. **Lithophragma tenella** T. & G. Fl. N. A. 1: 584. 1840.
Lithophragma glabra T. & G. Fl. N. A. 1: 584. 1840.
Tellima tenella and *T. glabra* Walp. Rep. 2: 371. 1843.
Lithophragma parviflora A. Gray, Ives Rep. 15. 1860. Name only.
Vancouver Island to Utah.

2. **Lithophragma rupicola** Greene, Erythea, 3: 102. 1895.
California.

3. **Lithophragma parviflora** Nutt.; T. & G. Fl. N. A. 1: 584. 1840.
Tellima parviflora Hook. Fl. Bor. Am. 1: 239. 1833.
Pleurendotria parviflora and *P. reniformis* Raf. Fl. Tell. 2: 73. 1836.
Mitella parviflora Dietr. Syn. 2: 1539. 1840.
Vancouver Island, Oregon, Utah, Wyoming.

4. **Lithophragma affinis** A. Gray; Proc. Am. Acad. 6: 534. 1865.
Lithophragma heterophylla Torr. Pac. R. R. Rep. 4: 90. 1857.
Tellima affinis Boland. Catal. 11. 1870.
California.

5. **Lithophragma heterophylla** T. & G. Fl. N. A. 1: 584. 1840.
Tellima heterophylla Hook. & Arn. Bot. Beech. 346. 1840.
California.

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* Original spelling, *Lithofragma.*

6. **Lithophragma tripartita** Greene, Erythea, 3: 102. 1895.
Tellima tripartita Greene, Erythea, 1: 106. 1893.
California.

7. **Lithophragma Bolanderi** A. Gray; Proc. Am. Acad. 6: 535. 1865.
Tellima Bolanderi Boland. Catal. 11. 1870.
California.

8. **Lithophragma scabrella** Greene, Erythea, 3: 102. 1895.
Tellima scabrella Greene; Pittonia, 2: 162. 1891.
California.

9. **Lithophragma Cymbalaria** T. & G. Fl. N. A. 1: 585. 1840.
Tellima Cymbalaria Walp. Rep. 2: 372. 1843.
California.

10. **Lithophragma Williamsii** (D. C. Eaton) Greene, Erythea, 3: 102. 1895.
Heuchera Williamsii D. C. Eaton, Bot. Gaz. 15: 62. 1890.
Tellima nudicaulis Greene, Pittonia, 2: 162. 1891.
Montana, Wyoming.

16. MITELLA L.

Stem leafy.
- Stem-leaves a single pair, opposite; stamens 10. — 1. *M. diphylla.*
- Stem-leaves 2–3, alternate; stamens 5. — 2. *M. caulescens.*

Stem a leafless scape.
- Stamens 10. — 3. *M. nuda.*
- Stamens 5.
  - Stamens opposite the petals. — 4. *M. pentandra.*
  - Stamens alternate with the petals.
    - Petals greenish or yellow, pinnately-parted.
      - Leaves round-reniform, mostly glabrous. — 5. *M. Breweri.*
      - Leaves oval, hirsute on upper surface. — 6. *M. ovalis.*
    - Petals white, 3-cleft.
      - Calyx campanulate, lobes long, spreading. — 7. *M. trifida.*
      - Calyx-lobes short; leaves angulate-lobed. — 8. *M. diversifolia.*

1. **Mitella diphylla** L. Sp. Pl. 406. 1753.
Quebec to Minnesota, North Carolina and Missouri.

2. **Mitella caulescens** Nutt.; T. & G. Fl. N. A. 1: 586. 1840.
Washington, Oregon, Idaho.

3. **Mitella nuda** L. Sp. Pl. 406. 1753.
Newfoundland to British Columbia, Pennsylvania and Michigan.

4. **Mitella pentandra** Hook. Bot. Mag. *pl. 2933.* 1828.
Drummondia mitelloides DC. Prodr. **4**: 50. 1830.
Pectiantia mitelloides Raf. Fl. Tell. **2**: 72. 1836.
Mitellopsis Drummondia Meisner, Pl. Vasc. Gen. **1**: 100. 1836.
Mitellopsis pentandra Walp. Rep. **2**: 370. 1843.
Alaska, British Columbia, Montana, Colorado, Utah.

5. **Mitella Breweri** A. Gray, Proc. Am. Acad. **6**: 533. 1865.
British Columbia, Washington, California.

6. **Mitella ovalis** Greene, Pittonia, **1**: 32. 1887.
Mitella Hallii Howell, Erythea, **3**: 33. 1895.
Vancouver Island.

7. **Mitella trifida** Graham, Edinb. New Phil. Journ. April, 1829. 185.
Ozomelis varians Raf. Fl. Tell. **2**: 73. 1836.
Mitellopsis Hookeri Meisner, Pl. Vasc. Gen. **1**: 100. 1836.

8. **Mitella diversifolia** Greene, Pittonia, **1**: 32. 1887.
California, Oregon.

17. LEPUROPETALON Ell. Bot. S.C. & Ga. **1**: 370. 1817.

1. **Lepuropetalon spathulatum** (Muhl.) Ell. Bot. S.C. & Ga. **1**: 370. 1817.
Pyxidanthera spathulata Muhl. Cat. 24. 1813.
Cryptopetalum pusillum Hook. & Arn. Bot. Misc. **3**: 345. 1832.
Lepuropetalon pusillum C. Gay, Fl. Chil. **3**: 42. 1847.
South Carolina, Chile.

18. CHRYSOSPLENIUM L.

Leaves alternate; stamens 8.	1. *C. alternifolium.*
Leaves opposite, or alternate; stamens 4.	2. *C. tetrandrum.*
Leaves opposite; stamens 8.	
Leaves obscurely crenate-lobed.	3. *C. Americanum.*
Leaves crenate-dentate.	4. *C. glechomaefolium.*

1. **Chrysosplenium alternifolium** L. Sp. Pl. 398. 1753.
Alaska, Europe, Asia.

2. **Chrysosplenium tetrandrum** Th. Fries, Bot. Notis. 193. 1858.
Chrysosplenium alternifolium var. *tetrandrum* Lund. in Sched. ex Maxim, Mel. biol. **9**: 761.

British Columbia. Recorded by Franchet (Nouv. Arch. Mus. Paris (III.) 2: 107 from Alaska and the mountains of Colorado (Harbour 576).

3. **Chrysosplenium Americanum** Schweinitz; Hook. Fl. Bor. Am. 1: 242. 1833.

New Jersey, Pennsylvania, New York, Wisconsin.

4. **Chrysosplenium glechomaefolium** Nutt.; T. & G. Fl. N. A. 1: 589. 1840.

Chrysosplenium oppositifolium var. β Hook. Fl. Bor. Am. 1: 242. 1833.

Columbia, Washington.

19. PARNASSIA L.

Petals fimbriate toward the base.	1. *P. fimbriata.*
Petals not fimbriate.	
Sterile filaments 3 in each set; flowers large, 1 inch in diameter or more.	
Leaves ovate or cordate ovate.	
Sterile filaments longer than the stamens.	2. *P. grandifolia.*
Sterile filaments about equalling the stamens.	3. *P. Caroliniana.*
Leaves reniform.	4. *P. asarifolia.*
Sterile filaments 3–8 in set; flowers small, less than 1 inch in diameter.	
Low, 8 inches or less; scape leafless, or with a small leaf near the base.	5. *P. Kotzebuei.*
Taller, the leaf not much below the middle of the scape.	6. *P. parviflora.*
Sterile filaments about 10 (9–15) in each set.	7. *P. palustris.*
Sterile filaments about 20 in each set.	8. *P. Californica.*

1. **Parnassia fimbriata** Banks; Sims & Koen. Ann. Bot. 1: 391. 1805.

Alaska, Washington, California, Montana, Wyoming, Colorado, Nevada, Utah.

2. **Parnassia grandifolia** DC. Prodr. 1: 320. 1824.

North Carolina, southwestern Virginia, Missouri, Florida.

3. **Parnassia Caroliniana** Michx. Fl. Bor. Am. 1: 184. 1803.

New Brunswick to Manitoba, Virginia, Illinois and Iowa.

4. **Parnassia asarifolia** Vent. Jard. Malm. *pl. 39.* 1803.

orth Carolinia, Georgia, Virginia.

5. **Parnassia Kotzebuei** Cham. & Schlecht. Linnaea, 1: 549. 1826.
Labrador, Bering Strait, Rocky Mountains.

6. **Parnassia parviflora** DC. Prodr. 1: 320. 1824.
Canada, Utah.

7. **Parnassia palustris** L. Sp. Pl. 273. 1753.
Labrador, Minnesota, Canada, Northwest Territory, Lake Superior.

8. **Parnassia Californica** (A. Gray) Greene, Pittonia, 2: 102. 1890.
Parnassia palustris var. *Californica* A. Gray, Bot. Calif. 1: 202. 1876.

Revision of the North American Thuidiums.

By G. N. Best.

The larger part of the material on which this revision is based was furnished by the collection of *Thuidiums* in the herbarium of Columbia University, consisting of a large number of both American and European specimens and exsiccatae. These have been especially useful in that they made a comparison possible between native and foreign species by which diagnostic characters could be deduced with more certainty than could otherwise have been done.

My thanks are due Mrs. Britton for verifying all the citations, arranging the synonymy and in securing the loan of type specimens; also M. Eugene Autran, Prof. John Macoun and Dr. B. L. Robinson for the loan of type specimens. For valuable contributions I am indebted to Dr. C. R. Barnes, Dr. Henri Philibert, Dr. T. C. Porter, Mr. E. A. Rau, Dr. J. K. Small and Rev. A. C. Waghorne.

The *Thuidiums* are widely dispersed over both continents. In North America they range from Greenland to Florida and from the Labrador to Vancouver's Island. Most common in the United States east of the Rocky Mountains, they are rare or absent on the Pacific slope.

In studying a specific type of wide distribution it should be

borne in mind that it has its centers of maximum as well as minimum development. In other words, it has its evolute and involute forms. In some instances these differ considerably, so much so that without the connecting forms they appear as distinct species. In fact they are not infrequently so treated, especially by those systematists who see a " new species " in the most trifling variation and who do not care to dispel the illusion by the necessary investigation.

In this revision I have endeavored to establish the commonly recognized species rather than to make new ones. Without ascertaing the precise limits of the former, it would be impossible to be sure of the latter. And as many of the *Thuidiums* are sterile in certain localities, diagnostic characters have been drawn largely from the vegetative system. The number and position of the papillae of the leaf cells, more than their size, have been found quite constant and therefore of value in discriminating closely related species. The paraphyllia, important from a generic standpoint, are less so from a specific, because of their variability. The cilia and perichetial bracts in these, as in nearly all mosses, are the parts most likely to be modified by changed conditions of growth.

Types have been seen when possible; when not, as was too frequently the case, authentic specimens. These have been studied with so much care as to almost preclude the possibility of mistake. Those species admitted into the Manual as peculiar to North America have likewise been closely investigated with the following results: *Thuidium erectum* Duby is *Th. delicatulum*, as is proved by the type and the author's own correction ; *Hypnum calyptratum* Sulliv. is *Th. microphyllum*, with abnormal capsules, due to parasites ; *Thuidium Alleni* Aust. is a dubious sterile form most probably of *Th. delicatulum ; Hypnum remotifolium* Grev. is not a *Thuidium*, neither is it North American. *Thuidium lignicola* Kindb., admitted in Macoun's Catalogue of Canadian Musci, represents the northern variation of *Th. microphylium* from which it seems impossible to separate it on good grounds. *Hypnum tamariscinum* Hedw., although quite common in Europe, appears to go by default in North America. The tripinnate ramification and the unipapillate apical cell of the branch-leaves serve to distinguish it from *Th. delicatulum*.

NOTE.—When unipapillate, bipapillate and pluripapillate are used in connection with leaf cells they mean respectively one, two, three or more papillae on each surface, unless otherwise stated; when leaf cells are referred to they invariably mean those of the stem leaves. ! indicates that the type has been seen by the author.

Thuidium Br. and Sch. Br. Eu. fasc. 49–51. 1852

Stem radiculose, creeping or ascending, erect, pinnately branched; branches simple, pinnate or bipinnate; stem and branches more or less thickly covered with simple or multiform paraphyllia; stem-leaves ovate-triangular to oblong-lanceolate, acuminate, cordate, plicate, strongly costate, papillate on one or both surfaces; branch-leaves ovate, or ovate-lanceolate, acuminate. Monoicous or dioicous; perichetial bracts rather long, costate, plicate; capsule oblong-cylindrical, asymetrical, suberect, horizontal or pendulous; annulus compound; internal membrane fully one-third the length of the teeth; cilia two to four, usually well developed; operculum from short conical to long rostrate; calyptra tubular-cucullate, long; spores small.

Plants of unequal size growing in thin or thick mats on the ground, stones, rocks, rotten wood and on the base of trees.

Synopsis of the Species.

Plants ascending-erect,
- Leaves rigid, cells quadrate-oblong; branch-leaves appressed when dry. 7. *abietinum.*
- Leaves soft, cells oblong-linear; branch-leaves crispate when dry. 10. *Blandowii.*

Plants creeping-ascending,
- Small; paraphyllia simple; branch-leaves appressed-incurved when dry,
  - Branches papillate, capillary. 1. *pygmaeum.*
  - Branches not papillate. 2. *minutulum.*
- Large; paraphyllia multiform; branch-leaves appressed when dry,
  - Stem-leaves spreading-recurved, margins plane; perichetium not ciliate. 4. *recognitum.*
  - Stem-leaves erect-spreading, margins recurved,
    - Perichetium not ciliate; annulus narrow, indistinct. 5. *Philiberti.*
    - Perichetium ciliate; annulus compound, distinct. 6. *delicatulum.*
  - Medium sized; paraphyllia mostly linear-geniculate.
    - Leaf-cells with several minute papillae. 3. *scitum.*
    - Leaf-cells with one, rarely two papillae.
      - Leaves smooth or lightly papillate. 11. *paludosum.*
      - Leaves strongly papillate on both surfaces.
        - Branch-leaves roundish-ovate, short-acuminate. 8. *Virginianum.*
        - Branch-leaves ovate-lanceolate, long-acuminate. 9. *microphyllum.*

EUTHUIDIUM: Stem-leaves and branch-leaves heteromorphous, papillate on both surfaces; leaf-cells quadrate-hexagonal to oblong-rhomboidal; paraphyllia simple or multiform.

1. THUIDIUM PYGMAEUM Br. & Sch.

Thuidium pygmaeum Br. and Sch. Bryol. Eu. fasc. 49–51: 6. 1852.

Hypnum pygmaeum Sull. Mosses U. S. 67. 1856.

Plants *very small*, dirty green in felt-like mats; stem 1 to 2 cm. long, creeping, pinnately branched; branches pinnate, capillary, subcompressed, *papillate;* paraphyllia *simple*, short, 2 to 5 cells long; stem-leaves triangular-ovate, narrowly acuminate, distant; leaf-cells quadrate-hexagonal (.006 mm.) pluripapillate; branch leaves (.15 mm) ovate, obtuse, *appressed-incurved* when dry. Monoicous; perichetial bracts erect, lanceolate or oblong-lanceolate, entire or serrulate above; pedicel long, flexuous; capsule oblong, *inequilateral*, inclined or horizontal, wide-mouthed; annulus broad, compound; cilia 2 to 3; operculum broadly conical, obliquely rostrate; spores .007 to .009 mm.

On stones, rarely on the ground, in calciferous districts. New Jersey (Austin); Pennsylvania (James, Porter, Rau); Ohio (Sullivant); Canada (Macoun).

Type locality American; collected by W. S. Sullivant, at Columbus, Ohio. Type at Kew. in Herb. Schimper.

ILLUST. Sulliv. Icon. Musc. 153. *pl. 98*. 1864.

EXSIC. S. & L. Musc. Bor. Am. Ed. 1, no. 275; Ed. 2, no. 408. Aust. Musc. App. no. 296.

2. THUIDIUM MINUTULUM (Hedw.) Br. & Sch.

Thuidium minutulum Br. & Sch. Bryol. Eu. fasc. 49–51. 1852.

Hypnum minutulum Hedw. Musc. frond. 4: 99. 1791.

Plants small, dark green, in thin mats: stem 2 to 4 cm. long, creeping, pinnately branched; branches simple or pinnate, spreading, subcompressed; paraphyllia *simple*, 3 to 6 cells long; stem leaves ovate-triangular, acuminate, recurved or revolute below, margins papillate-crenulate, costa vanishing in the abrupt usually curved acumen; leaf-cells quadrate-hexagonal (.009 mm.) pluripapillate, *marginal larger*; branch-leaves ovate-acuminate, *subcrispate* and *appressed incurved* when dry. Monoicous; perichetial bracts erect, long and narrowly acuminate, entire; pedicel long, flexuose; capsule *oval-oblong* to obovoid-oblong, asymetrical, hori-

* Apical cell of ultimate branch leaves crowned with two or more papillae.

zontal, *rough;* annulus compound, deciduous; operculum conical, slenderly beaked, usually oblique, as long as the capsule; spores .007 to .010 mm., almost smooth., maturing in autumn.

On rotton wood, not rarely on the ground and on stones in the Southern States. From New Brunswick to Minnesota and from Canada to Florida.

Type locality, Lancaster, Pennsylvania, Muhlenberg.

Illust. Hedw. Musc. frond. *pl. 34.* 1791. Br. & Sch. Bryol. Eu. 5. *pl. 481.* 1852. Husnot, Musc. Gall. *pl. 87.* 1894.

Exsic. Drumm. Musc. Am. ed. 2. No. 137. Sull. Musci All. No. 4. Sull. & Lesq. Musc. Bor. Am. ed 2. no. 481. Aust. Musc. App. No. 297. Macoun, Can. Musc. no. 268.

Rem. Distinguished from the closely related *Th. pygmaeum* by its larger size, dark green color, stem-leaves with longer costa and branch-leaves subcrispate when dry.

3. Thuidium scitum (Beauv.) Aust.

3. *Hypnum scitum* Beauv. Prodr. 69. 1805.

Hypnum Stereodon scitus Brid. Bryol. Univ. 2: 575. 1827.

Thuidium scitum Aust. Musci App. 51. 1870.

Rouia scita Aust. Bull. Torr. Club, 7: 16. 1880.

Medium sized plants, glaucous-green to yellow-brown, in appressed mats. Stem 4–6 cm. long, prostrate, simple or divided, *densely pinnately* branched; branches simple, spreading, *terete* when dry; paraphyllia multiform, mostly linear; stem-leaves broadly triangular, *subauriculate-cordate*, the pellucid costa vanishing at the base of the long narrow curved acumen, bisulcate; leaf-cells roundish hexagonal (.006 mm.) middle basal oblong, pluripapillate (3–6); branch-leaves broadly ovate-acuminate. Monoicous; perichetial bracts erect, long filiform-acuminate; capsule oblong-cylindrical, *straight* or slightly curved; *erect* or inclined; annulus of three rows of large pellucid cells; teeth linear-lanceolate, *pale;* cilia 2–3, rarely perfect; operculum conical-rostrate; spores rough .009–.011 mm. Maturing in the autumn and winter.

On the roots, at base of trees, more commonly the beech, rarely on stones, or on the ground. Canada (Macoun); Ohio (Miss Biddlecome); New Jersey (Austin); Wisconsin (Gillman); District of Columbia (Holzinger.)

Type locality, North American. Type in Delessert Herbarium, Geneva, Switzerland.

ILLUST. Sull. Icon. Musc. 155. *pl. 99.* 1864.

EXSIC. Sull. Musc. All. no. 6. S. & L. Musc. bor. Am. ed. 2. no. 409. Aust. Musc. App. no. 300. Macoun, Can. Musc. no. 269.

3a. THUIDIUM SCITUM ÆSTIVALE Austin, Musci App. 51. 1870.

Thuidium aestivum Aust. Bull. Torr. Club, 5, 23. 1874.

Thuidium scitum var. *aestivale* Aust. Musc. App. no. 301. 1870.

Hynum scitum var *aestivale* Lesq. & Jas. Mosses, of N. A. 323. 1884.

Stem more diffusely divided, less densely pinnate; perichetial bracts more abruptly filiform-acuminate; capsule *oblong-cylindrical. horizontal*, wide-mouthed; cilia well-developed; teeth lanceolate, yellowish below; operculum more abruptly and shorter beaked; spores larger.

Canada (Macoun); Ohio (Miss Biddlecome); New York (Howe, Peck); New Jersey (Austin); North Carolina (Small & Heller); Pennsylvania (Porter, Rau); Wisconsin (Cheney & True); Vermont (Grout.)

EXSIC. Aust. Musc. App. no. 301.

Rem. An evolute, as *Th. scitum* is the involute form of the same specific type. Both are neat, pretty mosses with finely granular leaves and very small papillae.

4. THUIDIUM RECOGNITUM (Hedw.) Lindb.

Hypnum recognitum Hedw. Musc. frond. 4: 92. 1791.

Hypnum protensum Michx. Fl. Bor. Am. 2: 317. 1803.

Hypnum tamariscinum var. *recognitum* Brid. Bryol. Univ. 2: 440. 1827.

Thuidium delicatulum Br. & Sch. Bryol. Eu. Fasc. 49-51. 1852.

Thuidium recognitum Lindb. Not Sallsk. pro Fauna et Flora Fenn. Forh. 13: 416. 1874. Schimp. Syn. Musc. ed. 2, 614. 1876.

Rather large plants in intricate mats, dark green to yellow-brown; stem 5 to 19 cm. long, creeping or ascending, pinnately branched; branches pinnate, spreading; paraphyllia multiform; stem leaves *spreading-recurved*, broadly triangular, abruptly acuminate, *subauriculate-cordate*, the papillate-serrate margins usually *plane*, sometimes recurved; the curved acumen *thickened* by the *percurrent* costa; leaf-cells unipapillate, not rarely bipapillate (papillae

large), oblong-quadrate at the basal margins, oblong-rhomboidal above, broadly linear along the costa; branch-leaves much smaller, ovate-acuminate. Dioicous; perichetial bracts rigid, the narrow acumen about as long as the body, serrate or with a few jagged teeth; capsule narrowly cylindrical, curved, horizontal; annulus broad, compound, operculum long conical to conic-rostrate; cilia 3 or 4; spores .011 to .013 mm.

On the ground, rotten wood and on rocks in damp shady places. From the Labrador (Waghorne) to British Columbia (Macoun) southward. Rare or absent on the Pacific slope and in the Gulf States.

Type locality in Saxony, Germany. Type in the Boissier Herbarium, at Geneva, Switzerland!

Illust. Hedw. Musc. frond. *pl. 35.* 1791. Husnot, Musc. Gall. *pl. 88.* 1894. Lindberg, l. c. 416. *pl. 1. fig. 9.* 1874.

Exsic. Drummond, Musci. Am. no. 214. S. & L. Musc. Bor. Am. ed. 2, no. 404; Aust. Musc. App. no. 303; Macoun, Can. Musc. no. 271.

Rem. Easily distinguished from *T. delicatulum* by its spreading-recurved leaves with their *long-celled thickened* acumen and the *absence* of cilia on the perichetial bracts. In some European specimens the perichetial bracts are longer than those of American plants.

5. Thuidium Philiberti Limpr.

Thuidium intermedium Philib. Rev. Bryol. 20: 33. 1893. Not Mitt. 1851.

Thuidium Philiberti Limpr. Rab. Kryptfl. 4: 2, 835. 1895.

Medium sized plants, yellow to dark green, in intricate mats; stem 4 to 8 cm. long, creeping, pinnately branched; branches pinnate or bipinnate; paraphyllia multiform; stem-leaves triangular-cordate-acuminate, usually with a *hyaline filiform* point, margins revolute or recurved, at least below; leaf-cells oblong-quadrate to oblong-rhomboidal. Dioicous; perichetial bracts loose, *flexuous spreading* or reflexed, serrate, rarely with a few short cilia on the innermost, acumen about *three* times as long as the short, scarcely costate body; capsule oblong-cylindrical, curved, horizontal; annulus *narrow, indistinct,* tardily or imperfectly deciduous; operculum conic-rostate, curved; spores .012 to .016 mm., almost smooth, maturing in October. (Plate 260.)

In wet, swampy places on the ground or the base of small trees. New Jersey (Best); Pennsylvania (Porter).

Type locality, European (France)!

Rem. Probably an involute form of the preceding, from which it differs by its pointed leaves, indistinct annulus, looser perichetial bracts, which are usually destitute of cilia, and more uniform leaf cells.

6. THUIDIUM DELICATULUM (L.) Mitt.

Hypnum delicatulum L. Sp. Pl. 1125. 1753.

Hypnum delicatulum Hedw. Musc. frond. **4**: 95. 1791.

Thuidium delicatulum Mitt. Journ. Linn. Soc. **12**: 578. 1869.

Plants large, in intricate spreading mats, yellow-green; stems 5 to 10 cm. long. creeping-ascending, pinnately branched; branches pinnate or *bipinnate;* paraphyllia numerous, multiform; stem leaves *appressed* when dry, erect-spreading when moist, triangular-cordate, rather *gradually* acuminate, costa *vanishing in the acumen*, the papillate-serrate margins recurved; leaf-cells unipapillate or bipapillate, oblong-quadrate to elliptical-rhomboidal; branch-leaves ovate or ovate-acuminate. Dioicous; perichetial bracts rather loose, inner more or less *ciliate*, the loricate-filiform serrate acumen about twice as long as the blade; capsule cylindrical, strongly curved, horizontal; annulus compound, tardily deciduous; operculum conic-rostrate, beak curved; cilia 3 to 4; spores rough, .014 to .018 mm, maturing in winter.

On the ground, rotten wood, stones and rocks in shady places. From Labrador (Waghorne) to British Columbia (Macoun) southward through the United States; rare or absent in the Pacific States. Also in the West Indies and Central and South America.

Type localities, "Pennsylvania, Maryland and Virginia."

ILLUST. Dill. Hist. Musc. 546. *pl. 83. fig. 6.* 1741. Hedw. Musc. frond. **4**: *pl. 33.* 1791. Lindberg, l. c. *pl. 1. fig. 8.* 1874. Husnot, Musc. Gall. *pl. 89.* 1894.

EXSIC. Drumm. Musc. Bor. Am. no. 213; 2d ed. no. 136. Sull. Musc. All. no. 3. as *H. tamariscinum* Hedw. S. & L. Musc. Bor. Am. ed. 1, no. 272; ed. 2, no. 403. Aust. Musc. App. 302. Macoun, Can. Musc. no. 272.

Rem. This and the preceding species often grow together. In American herbaria they are confused. *Th. delicatulum* is frequently named *Th. recognitum* and vice versa. The names *Hypnum tamariscinum* and *Hypnum proliferum* have been used indiscriminately for either.

7. THUIDIUM ABIETINUM (L.) Br. & Sch.

Hypnum abietinum L. Sp. Pl. ed. 2, 1591. 1763.

Hynum Stereodon abietinus Brid. Bryol. Univ. 2: 573. 1827.

Thuidium abietinum Br. & Sch. Bryol. Eu. fasc. 49–51. 1852.

Plants rather large, densely caespitose, yellow-green above, darker below; stem 5 to 9 cm. long, ascending-erect, rigid, simple or divided, *closely pinnately* branched; branches simple, unequal, attenuate, spreading or recurved, terete when dry; paraphyllia multiform, mostly linear; stem-leaves broadly ovate, acuminate, deeply biplicate, margins papillate-serrulate, plane or recurved, costate to the base of the acumen, appressed when dry; leafcells *in rows*, unipapillate, roundish, quadrate-hexagonal and very small at basal margins, oval-rhombic and much larger above; branch-leaves similar but smaller, apical cell with usually two papillae, sometimes only one. Dioicous; perichetial bracts mostly entire; capsule narrowly cylindrical, suberect, curved, strumose; annulus compound; segments widely open, papillate-striate; cilia 1 to 3, usually imperfect; operculum long-conical, acute; spores papillose, .012 to .016 mm., maturing in spring.

On rocks, stones and the ground, in dry sterile places. Common in Europe and North America, from Greenland to Virginia (E. G. Britton), and from Newfoundland (Waghorne) to British Columbia (Macoun.). Fruiting in Colorado (T. C. Porter) and in Montana (F. W. Anderson). Rare or absent in the Gulf States and on the Pacific slope.

Type locality European.

ILLUST. Hedw. Musc. frond. 4: *pl. 32.* 1791. Br. & Sch. Bryol. Eu. 5. *pl. 485.* 1852. Husnot, Musc. Gall. *pl. 88.* 1894.

EXSIC. Drumm. Musc. Bor. Am. no. 216. Aust. Musc. App. no. 304. Macoun, Can. Musc. no. 273.

8. THUIDIUM VIRGINIANUM (Brid.) Lindb.

Hypnum Stereodon Virginianus Brid. Bryol. Univ. 2: 276. 1827.

Thuidium Virginianus Lindb. Musc. Scand. 36. 1868. Besch. Prodr. Bryol. Mex. 91. 1871.

Hypnum gracile Lancastriense L. & J. Mosses N. A. 324. 1884.

Thuidium punctulatum De Not. Erbar. Critt. Ital. no. 909. 1863. et. Epil. 234. 1869. Limpr. Rab. Kryptfl. 4: 3, 825. 1895.

Plants small, dark or dirty green, intricately caespitose; stem 2–4 cm. long, creeping, pinnately branched; branches simple, erect-

spreading; paraphyllia multiform; stem leaves *roundish*, ovate-triangular, costa vanishing in the short acumen, scarcly plicate, margin *plane*, erose-dentate below, serrate above; leaf-cells oblong-quadrate to hexagonal (.009 mm.) unipapillate; papillae *stout*, broad at base, rarely bifurcate; branch leaves *roundish, ovate-acuminate*, acumen *short, broad, sharply serrate*. Monoicous; perichetial bracts erect, rigid, deeply plicate, margins denticulate-serrate; pedicel long, purplish; capsule oblong-cylindrical, inclined or horizontal, curved; annulus compound; cilia 2–3, nodose or appendiculate; operculum conical, obtusely short-beaked; spores smooth .008–.012 mm; maturing in spring. (Plate 261.)

In open woods on the ground, about stumps and roots of trees; from Massachusetts to Wisconsin south to Mexico. New York (Howe, Pease); New Jersey (Austin, Best); North Carolina (Small and Heller); Pennsylvania (James, Porter, Rau); Massachusetts (Faxon); Virginia (E. G. Britton, Small); Wisconsin (True).

Type locality, Virginia, Bannister and Mitchell.

Illust. Dill. Hist. Musc. 282. *pl. 36. f. 18.* 1741.

Exsic. S. & L. Musc. Bor. Am. ed. 1, no. 278; ed. 2, no. 411. Aust. Musc. App. no. 299.

9. Thuidium microphyllum (Sw.).

Hypnum microphyllum Sw. Prod. 142. 1788. Muhl. Cat. 99. 1813.

Hypnum gracile Br. & Sch. Lond. Journ. Bot. **2**: 668, name only. 1843. Mueller, Syn. Musc. **2**: 488. 1851.

Hypnum calyptratum Sull. Pac. R. Rep. **4**: 190. *pl. 10.* 1856.

Thuidium gracile Br. & Sch. Bryol. Eu. fasc. 49-51. 1852. Schimper Syn. Musc. ed. 2, 611. 1876.

Thuidium pallens Lindb. Ms. 1864.

Plants of medium size, flavescent to pale green, in spreading mats; stem 3 to 5 cm. long, creeping, pinnately branched; branches simple, spreading, subcompressed; paraphyllia multiform; stem leaves broadly ovate to ovate-lanceolate, long and narrowly acuminate, biplicate, margins sinuate-serrulate, rarely entire, plane or revolute, costa subpercurrent; leaf-cells oblong-quadrate to short-rhomboidal, usually *echlorophyllose, unipapillate*; papillae blunt; branch-leaves ovate-lanceolate, acuminate, the narrowly *oval* apical cell unipapillate. Monoicous, perichetial bracts erect, serrulate or entire; pedicel flexuous-curved; capsule oblong

or oblong-cylindrical, horizontal, curved; annulus compound; cilia 2 to 4; operculum *mammilate* to *short conical*, acute or obtuse; spores, .008–.012 mm., rough, maturing in summer.

On rotton wood, base of trees, stones and the ground. Canada, Manitoba and Vancouver's Island, southward, through the United States, east of the Rocky Mountains, to New Mexico. (Bigelow.)

Type from Jamaica, Swartz, in Herb. Boissier. !

Illust.: Hedw. Spec. Musc. *pl. 69. figs. 1–5.* 1801. Sull. Icon. Musc. 156. *pl. 100.* 1864.

Exsic.: Drumm. Musc. Bor. Am. no. 217; ed. 2, nos. 140-141. Sull. Musc. All. no. 5. Sull. & Lesq. Musc. Bor. Am. ed. 1, no. 277; ed. 2, no. 410. Aust. Musc. App. no. 298.

Rem. Quite variable, yet easily distinguished by its characters. Var. *Ravenellii* S. & L. is one of many involute forms growing on stones and in the sand in South Carolina and Florida.

9a. Thuidium microphyllum lignicolum (Kindb.).

Thuidium lignicola Kindb. Ott. Nat. 4: 63. 1890.

Plants larger, often rufescent, leaves broader, margins more or less recurved; leaf-cells more uniformly rhombic or rhomboidal; capsules usually shorter and more turgid.

From Ohio northward to Canada and westward to Vancouver's Island, with the type and scarcely separable from it!

HETEROTHUIDIUM: Stem leaves and branch leaves similar, smooth or more strongly papillate on lower surface; leaf cells oblong-linear to narrowly rhomboidal; paraphyllia dense, filamentous.

10. Thuidium Blandowii (W. & M.) Br. & Sch.

Hypnum Blandowii Web. &. Mohr, Bot. Tasch. 332. 1807.

Hypnum abietinum var. *paludosum* Wahl. Fl. Suec. 698. 1826.

Hypnum laricinum Wils. Eng. Bot. Suppl. 2: *pl. 2760.* 1832.

Thuidium Blandowii Br. & Sch. Bryol. Eu. fasc. 49-51: 10. 1852.

Plants of *large* size, densely caespitose, yellow-green above, darker below; stem 5 to 10 cm., long, *erect*, *rigid*, simple or divided, closely pinnately branched; branches simple, spreading or recurved; paraphyllia very numerous, tomentose, from an *oblong-linear rufescent* base, long-filamentous; stem-leaves *soft*, ovate-triangular, narrowly acuminate, deeply concave, sulcate, abruptly

contracted to a *subclasping* decurrent base with paraphyllose *appendages*; margins entire or sinuate-serrulate; costa vanishing above the middle; leaf-cells oblong-fusiform to linear-rhomboidal, with a *large* papilla at the *distal* end of each below, nearly smooth above; branch-leaves ovate or ovate-lanceolate acuminate, *subcrispate* when dry. Monoicous; perichetial bracts entire or denticulate; capsule oblong-cylindrical, curved, horizontal; cilia 3; segments scarcely rimose; annulus compound; operculum conical; spores smooth, .012 to .014 mm.

On wet marshy ground, with a northern range. Greenland (Fl. Gr.); Labrador (Waghorne); Canada and British Columbia (Macoun); southward to Idaho (Leiberg); Colorado (Wolf & Rothrock); Ohio (Sullivant); New York (Clinton); Vermont (Faxon).

Type locality, Megapolitania, Germany.

ILLUST. Schwaegr. Suppl. 2: 1, 158. *pl. 142.* 1824.

Br. & Sch. Bryol. Eur. 5: *pl. 486.* 1852.

Husnot, Muscol. Gall. *pl. 89.* 1894.

EXSIC. Drumm. Musc. Bor. Am. ed. 1, no. 215. S. & L. Musc. Bor. Am. ed. 2, no. 414. Aust. Musc. App. no. 305. Macoun, Can. Musc. no. 274.

Rem. Involute forms are found as far south as New Jersey and generally referred to the following species. The relation between *Th. paludosum* and *Th. Blandowii* is very close, and specimens are occasionally met with, a satisfactory reference of which is very difficult. It is probable that the former is a derivative from the latter, the difference due to a more southern habitat with a consequent tendency to spread to drier situations.

11. THUIDIUM PALUDOSUM (Sulliv.) Rau & Herv.

Hypnum paludosum Sull. Musc. All. No. 7. 1846. Mosses U. S., 68. 1856.

Elodium paludosum Austin, Musc. App. no. 306. 1870. Ren. & Cardot, Musci Am. Sept. 63. 1893.

Thuidium paludosum Rau & Herv. Cat. 38. 1880.

Plants of medium size, in spreading mats, yellow-green; stem 4 to 6 cm. long, pinnately branched; branches simple, spreading, subcompressed; paraphyllia numerous, geniculate-branching, filamentous; stem leaves rather *rigid, plicate-striate,* oblong-lanceolate, acuminate, the subdecurrent base usually with *1 to 3 cilia,* margins revolute below, recurved above, sinuate-serrulate, costa *subpercurrent;* leaf-cells oblong to linear-rhomboidal, *smooth* (in

type) or with a small papilla at the *distal* end of each cell on under surface, sometimes above; branch-leaves ovate-lanceolate, acuminate. Monoicous; perichetial bracts rigid, erect, entire or serrulate above; pedicel long, slender, *wiry;* capsule oblong-cylindrical, curved, horizontal; cilia 3; annulus compound; operculum conic-apiculate; spores smooth, .012 to .014 mm.

On the ground in swamps and grassy fields, Eastern and Middle States.

Type from Ohio, in Col. Sullivant. Gray Herbarium!

ILLUST.: Sull. Icon. Musc. 157. *pl. 101.* 1864.

EXSIC.: Sull. Musc. All. No. 7. S. & L. Musc. Bor. Am. ed. 1, No. 281; ed. 2, no. 415. Aust. Musc. App. no. 306.

10 a. THUIDIUM PALUDOSUM ELODIOIDES (R. & C.).

Thuidium elodioides Ren. & Card. Hewd. 32: 251. 1893.

Often dark green, leaves smaller, margins not rarely serrate-dentate; leaf-cells papillate on both surfaces, papillae sometimes central.

With the type. More common from New York (E. G. Britton) westward. Indiana (Schuh).

Hypnum Notarisii Boul. (*Thuidium decipiens* De Not), not yet found in North America, but likely to be, connects *Heterothuidium* with *Cratoneuron* Sch.

Three Editions of Emory's Report, 1848.

A note "On the two editions of Emory's report, 1848" has recently been published by Mr. John H. Barnhart,* describing the principal differences in the botanical appendices of Major W. H. Emory's "Notes of a military reconnoissance, from Fort Leavenworth, in Missouri, to San Diego, in California, including part of the Arkansas, Del Norte and Gila rivers." These differences are that in Document 41, printed for the Senate, the "explanation of plates" is omitted, as well as the matter on *Zinnia grandiflora*, *Convolvulus nuttallii*, and *Altenanthera lanuginosa*, the last two being new names; that the plates in No. 41 were lithographed by C. B. Graham, Washington; those in No. 7 by E. Weber & Co., Baltimore, the name on plate vi. in the former being *Baileya multiflora*, in the latter *Baileya multiradiata*; and

*Bull. Torr. Club. 22: 394-5. 1895.

that while in both reports the botanical appendix occupied pages 135 to 159, the same matter does not always occur on identical pages.

The Senate document was transmitted by the Secretary of War, December 15, 1847; the House document February 9, 1848, but in examining the two editions to ascertain which was issued the earlier, it is evident, from the correction of the name *Baileya multiflora* on plate vi. to *Baileya multiradiata* to correspond with the text, and from the reference, on Abert and Peck's map of New Mexico, to "the unpublished map of Lieut. Emory," as well as the nature of other changes in the body of the report, and the fact that the House and Senate papers were issued in different series, that Document 41 was the one first published.

In the body of the report the differences are almost exclusively botanical, consisting chiefly of the omission in Document 7 of many popular and scientific names of plants in sentences describing the vegetation. To the differences in the two documents noted by Mr. Barnhart it may be added that in Document 41 typographical errors in plant names are more frequent; that the capsule and seed of *Ipomoea leptophylla* are omitted from plate xi., and that the matter relative to *Cereus giganteus* was wholly revised in the other edition. Mr. Barnhart's statement that certain pages of Document 41 bear the mark [7] in the upper outside corner applies only to a part of the edition. This error was evidently either made or discovered and corrected during the printing of the edition. But perhaps the most important difference in the two documents is that No. 41 does not contain the general map of Major Emory's route from Fort Leavenworth to San Diego. It does, however, contain Abert and Peck's map of New Mexico and another map showing the distinctive route of Lieutenant Colonel Cooke, both of which were incorporated in Major Emory's large map published in Document 7. Both documents were printed by Wendell & Van Benthuysen, Washington. It is clear that the first edition of the Emory report is the one issued as House Document No. 41, the second as Senate Document No. 7.

The third edition of the report was published not by the government, but by H. Long & Brotner, New York, in the same year as the others, 1828. Not only is this edition an exact copy of

Doccment 7, but it is printed from the very same type, which has been double-leaded so as to extend the first 178 pages of the original (the remainder not being reproduced in the third edition) to 230 pages. As in Document 7, the lithograph plates and map are by E. Weber & Co., Baltimore. The botanical appendix occupies pages 179 to 211.

The three editions of Emory's report give evidence of sharp practice on the part of the printers. Of the two issued as public documents, the second, instead of being corrected upon the type pages so as to incorporate the necessary changes, was wholly reset, the government doubtless paying the cost of double composition. The type pages of the second edition, after suitable leading, were used in issuing a third edition under the name of the New York firm, who thus avoided the expense of composition.

FREDERICK V. COVILLE.

WASHINGTON, D. C.

A neglected Carex.

BY EUGENE P. BICKNELL.

In his "Analytical Table" (1824) Schweinitz published the name *Carex typhinoides*. No description of the plant appears beyond that which is afforded by five formal propositions of the "Table" which lead up to the name. The outline thus presented proves to be too lightly sketched to fix with certainty the identity of the plant intended, nor is there to be found in the "Monograph" of Schweinitz and Torrey, subsequent to the "Table" by only two years, any hint as to what the plant may have been. Later caricologists have referred the name to *Carex squarrosa* as a synonym.

The absence of any allusion to the name in Schweinitz and Torrey's "Monograph" would now be hard to explain were there not still in existence a letter written by Schweinitz to Torrey bearing on precisely this point. This letter is now on file at the Columbia College Herbarium and bears date "Bethl[ehem, Pa.], July 6 1824." I quote as follows; "I have very carefully revised the Carices this season, but have no other corrections to make of

consequence, except requesting you by all means to strike out the whole of the description of my proposed new species *Carex typhinoides*, for I have found it in great plenty this year, growing in such a manner as to leave no doubt that it is only a variety of *C. squarrosa*."

This statement, however, although enlightening as regards the "Monograph," is less conclusive than it might appear respecting the status of *Carex typhinoides*. The plant may indeed have been a several-spiked form of *Carex squarrosa*, long supposed to be a monostachyous species, as the "Table" has it, and known as *Carex typhina* Michx., or it may have been another plant, a species nearly allied to *Carex squarrosa*, which it is the purpose of this paper to define. Indeed Dewey interpreted the Schweinitzian plant in terms of this very species which he described as *Carex squarrosa* var. *typhinoides* (11: 316, 1826). But, while Dewey's description leaves no doubt as to the plant he had in view, it may fairly be doubted whether Schweinitz's name was correctly taken up for it. Should such a doubt be insisted on, another name would have to be added to the already overcrowded lists of *Carex*. It would therefore seem to be a reasonable, if technically vulnerable course to accept the interpretation of Dewey, a contemporary of Schweinitz, and base on it the identity of the plant which Schweinitz inadequately described and subsequently abandoned.

In now delimiting *Carex squarrosa* from *Carex typhinoides* it becomes necessary to redescribe in detail the former plant in connection with the description of its near ally with which it has all along been confounded.

CAREX SQUARROSA L.

About two feet high, culm slender, smooth below, rough on the angles above. Leaves and bracts long and narrowly accuminate, 2″ wide (1″–3″), pale green, rough on the edges. Spikes usually 1 or 2, sometimes 3, becoming tawny-stramineous, globose to oblong-cylindric, rounded at the top, rarely over 1′ long, the terminal one 6″–14″ long, 8″–9″ wide, the lower ones much smaller and often sub-globose, on short, slender, ascending peduncles; staminate portion of terminal spike conspicuous, clavate, rarely less than ½ the length of the fertile upper portion, sometimes ¾ its length, the loosely imbricated scales very acute or acuminate. Perigynia numerous, much crowded, reflexed at the base of the spike, above spreading or slightly ascending, 4″–4½″

long, somewhat inflated, obovoid-oblong or narrower, few-nerved, tapering more or less abruptly into the long and slender, straight, mostly smooth two-toothed beak. Achene stipitate, linear-oblong, trigonous with blunt angles and flat sides, minutely granular-puncticulate, often faintly striate, tapering into the continuous, persistent, brown style, which is stout at the base, turgid, and sinuously bent.

Specimens examined show a range of this species from Connecticut and New York to North Carolina, Tennessee, Indiana and Texas. The few records of *Carex squarossa* from Massachusetts appear to refer to the typical plant.

CAREX TYPHINOIDES Schw.

About two feet high or rather less, darker green than *C. squarrosa*, the culm usually stouter and more sharply angled, the lower leaves often more approximate and with shorter sheaths. Culm smooth below, rough on the angles at the top, leaves and bracts broad, 2″–5″ wide, rough on the edges, the leafy bracts much exceeding the culm, spikes becoming dull stramineous, 2–6, mostly 3, contiguous or separated, when more than 3 the longer ones often distant, all but the terminal one (or upper two) on slender, erect or ascending peduncles, which are sometimes 2′–3′ long; all the spikes are longer and narrower than in *C. squarrosa*, the terminal one 12″–20″ long, 6″–7″ wide, conoid-cylindric, usually truncate at base and slightly tapering above the middle to the conical apex which is usually pointed with a more or less evident tuft of sterile scales. Basal staminate portion of spikes very short or obscure, even in the terminal spike rarely over 3″ long, the scales oblong or oblong-lanceolate, mostly obtuse, the upper ones curiously reflexed in a rosette against the lower perigynia. Perigynia densely compressed-crowded, the beaks sharply ascending except those near the base of the spike, of rather thicker texture than those of *C. squarrosa* and shorter, 3″–3½″ long, cuneate-obovate, truncate or abruptly contracted to the slender but strong, roughish, minutely two-toothed beak, which is strongly nerved at the base, and often slightly incurved as well as upwardly bent. Scales mostly equalling the body of the perigynium, oblong-lanceolate, obtuse. Achene ovate-elliptic, trigonous with concave sides, the angles slightly swollen in the middle, very minutely granular-puncticulate, not striate, not tapering into the style which is very slender, straight, greenish, easily detaching at the base or a little above.

Quebec to Washington, D. C., Missouri and Louisiana.

About New York I find *C. squarrosa* in damp or wet places in woods and meadows; *C. typhinoides* occurs more particularly in

overflowed meadows and along river bottoms. In such places the two plants often grow together, but in woods or wet places on higher ground, where *C. squarrosa* often grows in abundance, *C. typhinoides* seems never to occur.

Extreme forms of these two sedges are strikingly unlike in appearance; other forms show a similarity of aspect which is sometimes confusing. However the identity of such forms comes out plainly enough upon closer observation, and can always be instantly established by an appeal to fruit characters. The differences in the achenes and styles of the two plants is especially noteworthy and have proved to be singularly constant in a large number of specimens from widely separated localities.

It may be added that *Carex squarrosa* as described by Linnaeus is clearly that species as distinguished from *Carex typhinoides;* so also is the *Carex typhina* of Michaux. The species was first figured by Schweinitz and Torrey (Monograph, plate 27); later it was figured by Dewey (11: *pl. 2. fig. 29.* 1826). Boott's illustrations of *Carex squarrosa* (1860) refer in part only to that species as here defined. His plate 281 is unmistakably *Carex typhinoides*, while plate 280 can scarcely be other than a composite figure made up partly of each species.

Notes on some Florida Plants.—II.

By Geo. V. Nash.

My second collection of Florida plants was made in 1895, beginning late in May and ending early in September. Very little collecting, except among the Fungi and Lichens, was done in Eustis or its vicinity, the field of my operations the previous year, although I again made this place my headquarters. The area explored extended from the Manatee River in the south to Jacksonville in the north, thence westward through Columbia, Jefferson, Leon and Gadsden Counties, to the Apalachicola River. This was my main collecting ground, and is all tributary to the Florida Central and Peninsular Railroad. The country traversed by this road is very interesting, particularly from a botanical standpoint, the flora varying from semi-tropical to temperate. The terminus

of the southern division is at Tampa, where the vegetation is semi-tropical. The country to the north of this is an alternation of high pine land, called locally "black jack ridges," and flatwoods, yielding a most interesting lot of plants. The western division extends from Baldwin to River Junction in Gadsden county. The flora of this section is quite different from that of the peninsula, and more nearly approaches that of the North. This is particularly the case at Tallahassee and in its immediate vicinity. The soil is a red clay, and the country one of hills and valleys, a most unusual condition for this State. Familiar plants of the North were continually turning up. This red clay country is only a few miles in extent, however, and soon disappears, the pine lands again becoming prominent.

As stated above, my main collecting field was from the Manatee river to the Apalachicola river. In addition to this I made two or three trips to Sanford, in Orange Co.; one to Titusville, on the Indian River, in Brevard Co., my only approach to the east coast; and a short trip from Tallahassee to St. Marks, in Wakulla Co., where Rugel collected in 1843 and discovered some interesting things, some of which I succeeded in again finding.

The Mantatee river is nearly tropical in its flora. On Sneed's Island, at the mouth of this river, are found a number of strictly tropical plants, which cannot be secured on the mainland for a number of miles further south. Their occurrence on this island is probably due to the immunity it enjoys from frost, the water serving as a protection.

The above brief account will give some idea of the varied nature of my collections in 1895. A large number of species and varieties new to science, some plants hitherto unknown to occur in the State, and a number of rare things were secured. The following notes on the more important acquisitions may be of interest:

Tumion taxifolium (Arn.) Greene. (*Torreya taxifolia* Arn.) The only known locality, the Apalachicola river, for this rare conifer was visited in August and September. The natives, by whom it is called "stinking cedar," informed me that it occurred from just south of the Georgia line to a distance of some fifteen miles down the river, and that it was confined exclusively to the eastern

bank. The locality where I saw it growing was about one quarter of a mile north of River Junction. In this spot there were some twenty or thirty trees. The tree is conical in outline, the branches horizontal and widely spreading. The foliage is a fine deep green, the upper surface shining. The odor of the bruised leaves is very disagreeable, as I discovered on climbing one of the trees, and the local name of "stinking cedar" is well applied. The leaves are also quite sharp-pointed and irritate the skin considerably, causing an unpleasant burning sensation. On my first visit in August I succeeded in finding only one tree in fruit. On my next visit, on September 5, I discovered further up two or three more fruiting specimens.

The tree is evidently having a hard struggle to maintain itself. In the locality visited by me it occupies the very extremities and sides of the small ridges extending from the high pine land out into the river swamp. I could find none in the low-lying ground at the base of the ridges nor in the high pine land further back. Its evident inability to thrive in the very low land and the antagonism of the other surrounding trees which are better suited to the environment make its final extinction apparently certain. No. 2381.

Paspalum arenarium Schrad. In the low pine land around Eustis, Lake Co. Not very common. No. 2074.

Paspalum racemosum Nutt. Rare. Found in the pine land at River Junction, Gadsden Co. In the living state the plant has a decidedly glaucous hue. No. 2579.

Cenchrus gracillimus Nash. Further observation of this grass in the field confirms the disposition I made of it last year. It is very distinct from *C. tribuloides*. This grass is very common around Eustis, Lake Co., but its occurrence in the northern and western parts of the State was not noticed. No. 1766.

Cenchrus incertus M. A. Curtis. Quite common in the pine land at River Junction, Gadsden Co., but not seen east of that place, nor in the peninsula. It is very distinct. The broader spines, and the entire absence of reflexed spines at the base of the involucre, giving it a naked appearance, well distinguish it from any form of *C. tribuloides*. No. 2580.

HYDROCHLOA FLUITANS (Michx.) (*Hydrochloa Carolinensis* Beauv.). At Lloyds, Jefferson Co., flowering profusely, in which condition it is very rare. In a sterile state it is very common in many bodies of still water. No. 2512.

ARISTIDA PATULA Chapm. ined. (*Aristida scabra* Chapm. Fl. S. St. 663. 1884. Not Kunth, 1833.) In the pine land back of Titusville, Brevard Co., No. 2295; near Sanford, Orange Co., No. 2276; and very common just back of the beach line at Ballast Point, near Tampa, where it grew luxuriantly, forming large tufts, No. 2424a.

ERAGROSTIS HIRSUTA (Michx.) Not Nees, 1829, nor Wood, 1861. (*Poa hirsuta* Michx.) Very common in fields at Tallahassee, Leon Co., forming broad tufts, 2–3 feet tall. No. 2521. The synonymy of this grass is exceedingly mixed. The *E. hirsuta* Nees (Fl. Bras. 2: Part 2, 508. 1829), *E. hirsuta* Wood (Classbook, 796. 1861), and *Poa hirsuta* Muhl. (Gram. 145. 1817), appear to be the *E. pectinacea* A. Gray, judging from the descriptions given in each case. The *Poa hirsuta* Michx. is apparently an entirely different plant, as evidenced by a fragment of the type of Michaux, preserved in the Columbia College Herbarium. This grass ranges from North Carolina to Florida, thence west to Louisiana, and possibly to Texas. It has been confounded with *E. capilliaris* Nees. Curtiss' No. 3499 belongs here.

Uniola longifolia Scribn. Found growing abundantly along the edge of a dry woods, near Tallahassee, No 2521; also in pine woods at River Junction, Gadsden Co., about forty miles to the west of the above place, No. 2591a. I was much surprised at its further occurrence in some abundance in a tropical hammock on Sneed's Island, near the mouth of the Manatee River, in the southern part of the peninsula, over 400 miles from the above named localities. The villous sheaths of this species are constant, and readily separate it from the others of the genus.

Rynchospora miliacea (Lam.) A. Gray. Apparently rare, as I found it in only two places, both within a few miles of Eustis, Lake Co., No. 1845.

Scleria hirtella Sw. Rare. Among tall grass in the low pine land, near Eustis, Lake Co., No. 1917.

SABAL ETONIA Swingle, n. sp.

Plant 8–14 dm. tall. Rootstock more or less contorted, elongated, bearing numerous roots on the lower surface along its entire length; leaves nearly orbicular in outline, 4–6 dm. long, about two-thirds the length of the petioles, strongly folded at the base along the middle, divided almost to the bottom, the divisions linear, acuminate, the sinuses long-filiferous; petioles 1–1.5 cm. broad, smooth, triangular, the back rounded, the edges sharp; spadix a little shorter than the leaves, branching above, erect or ascending in flower, prostrate in fruit; flowers yellowish white; divisions of the perianth elliptic, obtuse, 5-nerved, 3–3.5 mm. long, 1.5–1.75 mm. broad, concave; stamens a little longer than the perianth, the filaments broad-subulate, slightly exceeding 3 mm. in length; anthers narrowly ovate, about 1.5 mm. long; fruit 1.3–1.5 cm. in diameter.

Very common in and confined strictly to the "scrub." Collected in 1894 in the vicinity of Eustis, Lake Co., and distributed under No. 999.

Mr. W. T. Swingle, of the Sub-Tropical Laboratory at Eustis, first called attention to this new palm at the meeting of the Botanical Club, A. A. A. S., in Madison Wis., in August, 1893,* but no description of it has hitherto been published, so far as I am able to ascertain.

It is related to *S. Palmetto*, but it is abundantly distinct from that species, particularly in its manner of growth. The rootstocks of the two species are totally unlike. In the seedling state they are probably very similar, judging from examinations made on comparatively young plants of both forms. As they grow older, however, the differences in manner of growth become very marked. In *S. Etonia* the rootstock is elongated and more or less contorted, in some instances doubling and redoubling on itself, forming a perfect S. It is firmly anchored in the soil by innumerable roots, borne along its under surface, the growing end running along the surface of the soil, but never rising above it. As stated above, the rootstock is always elongated, from 2–3 feet in length, the rear part apparently dying and rotting away as the bud advances.

In *S. Palmetto* the behavior of the rootstock is very different, and only in very young plants can its early stages be found. It goes directly down, then bends sharply and rises to the surface,

*Bull. Torr. Bot Club, 20:364. 1893. Bot. Gaz. 18:348. 1893.

continuing in an erect aërial stem which often attains a height of 50–70 feet. In the young plants this downward portion is manifest as an erect spur-like body, appressed to and much smaller than the ascending part of the rootstock, but it soon disappears and in plants but a few feet in height no trace of it can be found. In old individuals, therefore, the subterranean extremity of the trunk is knob-like, with hundreds of roots radiating in all directions, making a marked contrast to the elongated and contorted rootstock of *S. Etonia*, bearing roots its entire length. The fruit in *S. Etonia* is larger than that in *S. Palmetto*.

Lachnocaulon Beyrichianum Sporleder. Very abundant around the shores of Blue Lake and Lake Gracie, both near Eustis, Lake Co. No. 1855.

Lachnocaulon glabrum Koern. Not as common as the above. Along the sandy shore of Blue Lake, near Eustis. No. 1981.

HABENARIA CONSPICUA n. sp.

Whole plant glabrous, 4–8 dm. tall. Leaves linear to lanceolate-linear, erect or ascending, usually acute, the lower one 10–25 cm. long, 1–2 cm. broad, the remaining ones gradually becoming shorter and passing into the bracts of the inflorescence; spike ovate to oblong, 6–12 cm. long, 5–7 cm. in diameter; flowers numerous, white; tube of the calyx 2–2.5 cm. long, the sepals orbicular or nearly so, 7 mm. in diameter; petals oblanceolate, about 5 mm. long, from nearly entire to more or less toothed at the apex; lip 12–15 mm. in length, narrowly oblong, the claw 4–5 mm. long, the blade deeply fimbriate; spur curved, narrowly cylindric, 4–5 cm. in length.

Collected on the edge of a sphagnum bog at Lake City, Columbia Co., No. 2501, and observed at a number of other places. It was distributed in my collection of 1894, under No. 1700, as *H. blephariglottis*, from which it is abundantly distinct, the larger flowers, longer spur, and deeply fimbriate lip readily separating it.

Tipularia unifolia (Muhl.) B. S. P. In great abundance and in fine condition on a damp hillside near Tallahassee, Leon Co. No. 2361.

Persea humilis Nash. Further observation in the field confirms me in the disposition made of this tree last year. It is confined exclusively to the "scrub," a sandy area covered with scrub oaks, intermixed with the scrub pine, *P. clausa*, and the home of *Sabal Etonia*. When in the virgin "scrub," it rarely attains a height of

more than 6 or 8 feet. In the open, or along the roadside, where the surrounding shrubs have been cut away, it often becomes 15 or 20 feet tall. Mr. H. J. Webber, of the Sub-Tropical Laboratory at Eustis, kindly collected for me last November a lot of fine fruiting specimens, thus enabling me to distribute it in fruit, No. 2601.

WAREA SESSILIFOLIA n. sp.

Annual. Whole plant glabrous, branched, sometimes diffusely so, 3–6 dm. tall; leaves erect or ascending, ovate, sessile, those on the stem 1–2 cm. long, 5–10 mm. broad, those on the branches gradually reduced, the uppermost one usually about 5 mm. long; racemes densely flowered, 2–3 cm. in length; pedicels filiform, 6–10 mm. long; sepals spatulate, purple at the broadened base, becoming greenish towards the apex, 7–8 mm. long, about 1 mm. broad, reflexed; petals deep purple, the claw 5–6 mm. long, filiform above, gradually broadened toward the base, pubescent on the lower half, the blade broadly ovate or oval, abruptly narrowed into the claw, about 5 mm. long, 4–4.5 mm. broad; stamens about 1.5 cm. in length, the filaments thread-like, purple except toward the white summit; anthers linear, coiled when dry, 2 mm. long, .5 mm. broad; pod not seen.

Collected in the pine lands at Bellair, about 4 miles south of Tallahassee, Leon Co. The larger deep purple flowers and the ovate merely sessile leaves, not sagittate nor clasping as in *W. amplexifolia*, readily distinguish this plant from either of the other species. No. 2544.

GLOTTIDIUM FLORIDANUM ATRO-RUBRUM n. var.

Flowers a deep black-purple. Otherwise much as in the type.

Occurring from Tampa, where my specimens were secured, southward, No. 2415. In this region it entirely replaces the yellow-flowered form which is very common from Lake Co. north to Jacksonville and west to Tallahassee.

Melia Azederach L. Escaping into the low woods around Eustis, Lake Co.; also at Tallahassee, Leon Co., where my specimens were obtained. No. 2359.

Crotonopsis spinosa Nash. Found in great abundance about three miles north of Eustis, Lake Co., No. 1971. Very common from Lake City, Columbia Co., westward.

CYRILLA PARVIFOLIA Shuttlw. n. sp.

A compact and much branched shrub about two metres tall.

Glabrous; leaves cuneate-obovate or oblanceolate, short-petioled, reticulate, acute, or the smaller ones obtusish, 1.5–5 cm. long, 5–12 mm. wide; racemes 3–8 cm. in length; flowers numerous, sepals triangular, 1 mm. long, slightly longer than broad, petals narrowly elliptic-ovate, rugose-thickened at the base and along the middle for about two-thirds their length, obtuse, 2.5 mm. long, 1 mm. broad; stamens 2.5 mm. long, filaments linear-subulate, anthers oval, .6 mm. long; capsule nearly globuse, slightly flattened laterally, 2.5–3 mm. in diameter.

Collected in fruit at St. Marks, Wakulla Co., No. 2543. Since distributing my plants I find that the name parvifolia was applied, but not published, by Shuttleworth to specimens of the same thing collected in flower by Rugel, in 1843, also at St. Marks. I therefore publish it as above.

It is quite distinct from *C. racemiflora*, the lower habit, smaller leaves, shorter racemes, and globose, not ovoid, capsules readily serving to separate it from that species.

Acer Drummondii Hook. & Arn. Very common in swamps, No. 2147. My No. 872, of the 1894 collection, is also this species, and not *Acer rubrum* L., under which name it was distributed.

Sapindus Manatensis Radlkofer. I secured good fruiting specimens of this tree, No. 2460. The type locality is the mouth of the Manatee River. My collection was made on the south side of Sneed's Island, not far from the mouth of this river. Mr. J. H. Simpson, of Manatee, a gentleman very familiar with the flora of that region, informs me that the tree is confined to the above named island, and thrives only there; that there are a few trees on the mainland, but that they are stunted and not at home.

From the above it would seem that my specimens were from the type locality, as it is not known to occur anywhere else near the mouth of the Manatee River. It is certainly distinct from *S. marginatus*, not only in the shape and size of the glabrous leaves, but also in the larger and oblong fruit. In *S. marginatus* the fruit is globose, and the leaves pubescent.

SIDA RUBRO-MARGINATA n. sp.

Much branched, 6–10 dm. tall. Stems purple, sparingly pubescent or glabrous; stipules linear, 5–10 mm. long; leaves bright light green, glabrous, lanceolate, narrow-elliptic, or obovate, serrate, purple-margined, acutish at the apex, narrowed and rounded

at the base, 1.5–5.5 cm. long, 3–20 mm. wide, on slender petioles 3–5 mm. long; peduncles single, shorter than the leaves, 7–15 mm. long; flowers light orange, 3–3.5 cm. in diameter; calyx angled, its teeth deltoid, acute or acuminate, about 5 mm. long; petals obovate-deltoid, about 1.5 cm. long, unequally 2-lobed at the apex, the margins, except toward the base, ciliate with short glandular hairs; carpels 8-10, usually 2-awned.

Collected at Ballast Point, near Tampa, No. 2472. Also secured by Dr. Palmer in 1874, at Fort Capron, on the Indian River, No. 54.

Abundantly distinct from *S. rhombifolia* L. by its taller habit, bright light green thicker leaves, shorter peduncles, and larger deeper colored flowers. *S. rhombifolia*, moreover, is apparently introduced into Florida, as it occurs only in waste places, while this plant is evidently indigenous to the state.

CORNUS MICROCARPA n. sp.

Shrub 3–4 metres tall, stems slender and recurved, branching toward the top. Bark gray; branches brownish, sparingly pubescent; leaves 3–9 cm. long, 1.5–4.5 cm. broad, oval, acute at the base, abruptly blunt-pointed at the apex, appressed-pubescent on both sides, sparingly so on the upper surface, the hairs on the lower surface curled; petioles 2–6 mm. long, more or less pubescent; cymes pubescent; flowers white, 6 mm. in diameter; calyx-teeth deltoid, about .5 mm. long; petals ovate, about 2.5 mm. long, 1–1.3 mm. broad, appressed-pubescent on the outside; filaments subulate, 2.5 mm. long; anthers 1.5 mm. long; fruit light blue, about 4 mm. in diameter, the stone slightly compressed, longer than broad, 2.5–3 mm. long, 2–2.5 mm. broad.

Collected in fruit in low woods at River Junction, Gadsden Co., No. 2589. Specimens of the same in flower, collected by Dr. Chapman, are in the Herbarium of Columbia College, and also in the National Herbarium.

Nearest to *C. asperifolia*, but easily distinguished by its smaller flowers and fruit, the latter light blue and with a stone longer than broad.

Dr. Chapman, in his Flora of the Southern United States, p. 168, describes the fruit of the *C. asperifolia* of that work as "pale blue." In Coulter & Evan's monograph of the genus Cornus, the fruit of *C. asperifolia* is given as white. I do not remember having seen a white-fruited Cornus in the state. It is probable that

all of the Florida material, hitherto referred to *C. asperifolia*, belongs here.

Bumelia lanuginosa Pers. Quite frequent around Lake City, Columbia Co., No. 2167. The plant I distributed in my 1894 collection, under the above name, No. 818, is probably *B. tenax*.

Jacquemontia tamnifolia (L.) Griseb. Quite common in a field at Tallahassee, Leon Co., No. 2516. I do not find that it has before been recorded from Florida.

Nama corymbosa (Ell.) Kuntze. (*Hydrolea corymbosa* Ell.) In 1894 I secured a few specimens of this rare plant. Last summer I found it growing in great abundance in the flatwoods along the Jacksonville, Tampa & Key West R. R., between Paola and Sanford. No. 2281.

VERBENA (§NOBILES) TAMPENSIS n. sp.

Glabrous, or pubescent with short appressed hairs. Stems erect from a decumbent and often creeping base, usually more or less branched; leaves oval or ovate, paler beneath, 2.5–7 cm. long; acute, cuneate and entire at the base, narrowed into margined petioles .5–2.5 cm. long, coarsely and irregularly crenate-serrate; spikes 2–10 cm. in length, capitate when young, cylindric in age and often interrupted below, its bracts subulate, strigillose, ciliate, about one-half as long as the calyx; calyx strigillose, 12–15 mm. in length, its teeth subulate, 2–4 mm. long; corolla purple, the tube pubescent on the outside and in the throat, about 1.5 cm. long, the limb 1 cm. in diameter, its lobes obovate, emarginate at the apex; anthers without a gland on the connective; nutlets cylindric with a broadened base, about 4 mm. long, furrowed a the base and areolate toward the apex.

Collected just back of the beach line at Ballast Point, near Tampa, No. 2470. Curtiss's No. 1963, distributed as *V. Aubletia* L., belongs here; also Garber's plant, collected at Tampa in May, 1876. In general appearance this plant has some resemblance to *V. Aubletia*, but a critical examination will readily show its differerences. The entire absence of the gland on the anther connective, a character of the section in which *V. Aubletia* is placed, at once makes manifest its dissimilarity to that species.

MONARDA PUNCTATA LEUCANTHA n. var.

Of much taller habit, 10–15 dm., the flowers pure white, spotted with purple; otherwise much like the type.

A few specimens of this were secured at Ballast Point, near

Tampa, No. 2420; but on Sneed's Island, near the mouth of the Manatee River, it occurred in great abundance and luxuriance, forming large masses, at the foot of a shell mound, No. 2456. In both localities the flowers were a pure white. *Monarda punctata* was observed in great abundance in the northern tier of counties from Lake City westward, being particularly common around Tallahassee and River Junction. The flowers were invariably of a dull golden yellow. From Tampa south this was entirely replaced by the white-flowered form.

SCOPARIA GRANDIFLORA n. sp.

Plant glabrous, or sparingly puberulent, 7–12 dm. tall, usually much branched, the branches erect or ascending, in whorls of three. Leaves in 3's, 2–5 cm. long, 3–10 mm. wide, oblanceolate, acute, entire and attenuate at the base into short margined petioles, remotely and irregularly serrate above the middle with obtuse teeth; pedicels single in the axils of the leaves, filiform, 4–8 mm. long, spreading or ascending; calyx 3 mm. long, its 4 lobes oval, obtuse or acutish, about 2.5 mm. long, 3-nerved, strongly glandular on the outside, ciliate; corolla white, 1 cm. broad, its 4 lobes oblong obovate, 4 mm. long, 2.5 mm. broad; stamens 4, the filaments about 2.5 mm. long, the anthers oblong, 1.5 mm. long, .75 mm. broad; ovary oval, one-half as long as the style; capsule ovoid, about 2.5 mm. long, equalling or slightly shorter than the calyx and as long as or exceeded by the style; seeds .5 mm. long, oblong.

Collected in the flatwoods at Tampa, where it was quite frequent, No. 2417. Also secured by Mr. J. H. Simpson in 1889, and determined as *S. dulcis*, to which species it has but a superficial resemblance. What appears to be the same thing was found by Mr. H. J. Webber at Manatee.

This plant is readily distinguished from *S. dulcis* L. by its greater height; the larger corolla, twice the diameter of that of *S. dulcis*; the ciliate and less strongly nerved calyx lobes; the capsule not exceeding the sepals; the longer style; and the much larger seeds, nearly twice the size of those in *S. dulcis*.

UTRICULARIA FLORIDANA n. sp.

Stems rooting at the base, 6–15 dm. in length. Leaves capillary, much divided; scapes simple, or sometimes with a single branch, weak and tortuous, 15–40 cm. in length, 10–25-flowered, thick and spongy, much attenuated toward the base; pedicels

erect or ascending, even in fruit, 1–1.5 cm. long, slender; flowers yellow, about 1.5 cm. in diameter; spur conic-cylindric, straight, obtuse, ascending, about 7 mm. long, shorter than the lower lip; capsule 5–8 mm., in diameter.

Very abundant in a small pond between Eustis and Umatilla, Lake Co., No. 1970. It formed a belt, a few feet from the shore, some 15 feet wide. This is apparently the same as my No. 492 of the 1894 collection, obtained in a sterile condition at Lake Irma, near Eustis. It grew nearer the shore and in shallower water than the plant I collected the past summer, so I was enabled to secure the lower portions of the plant. The stem crept along the mud at the bottom, sending up two kinds of branches, one bearing leaves and no bladders, the other the reverse of this. In this respect it is related to *U. oligosperma*, but in that species the stem is free-swimming; it also differs much in other particulars.

Plantago aristata Michx. This plant is just making its appearance around Eustis, Lake Co., in waste places and orange groves. None of it was observed in 1894, and but a few specimens this past summer. No. 1828.

EUPATORIUM ANOMALUM n. sp.

Whole plant, particularly the branches of the inflorescence, pubescent with short appressed rigid hairs. Stem 8–15 dm. tall; leaves spreading or ascending, 3–7 cm. long, 1–3 cm. broad, ovate to ovate-lanceolate, acute at both ends, short-petioled, coarsely and irregularly serrate, obscurely 3-nerved; involucre 5-flowered, resinous-dotted, cylindric, 5–6 mm. long, about 2 mm. in diameter, its 10-12 acute or acutish scales appressed-pubescent, scarious on the margins, the 5 inner ones linear or linear-lanceolate, much exceeded by the pappus, the outer scales much shorter than the inner; achenes resinous-dotted.

Collected at Lloyds, Jefferson Co., at the margin of a low woods, No. 2515. Apparently the same plant occurs at Fortress Monroe, Va., represented by a specimen in the National Herbarium, collected by Dr. Geo. Vasey.

Its affinity is with *E. hyssopifolium*, but readily separated from any form of that species by its much taller habit, and the broader and differently shaped leaves which are coarsely and irregularly serrate.

LACINARIA CHAPMANII LONGIFOLIA n. var.

Stems minutely pubescent, 6–15 dm. tall. Leaves narrowly

linear, much attenuated at the base, glabrous, punctate, 1-nerved, the lower 10–15 cm. in length; inflorescence, involucre and flowers much as in the type.

In pine lands between Tampa and Ballast Point, about 5 miles from the former place, along the line of the electric railroad, No. 2473. The taller stem, the constantly glabrous and longer leaves, and the more southern range, would seem to make this plant worthy of varietal rank. Further field observations may, however, prove it to be but a form of the type, which occurs in the western extension of the State.

Lacinaria Garberi (A. Gray) Kuntze. This rare plant was very plentiful on the prairies near Palmetto, Manatee Co., No. 2430. Dr. Garber, in whose honor it was named, collected it first at Tampa.

CHRYSOPSIS FLEXUOSA n. sp.

Whole plant, with the exception of the involucres and upper surface of the leaves, copiously lanate, the hairs silky and deciduous. Stems 2–4 dm. tall, flexuous, ascending, branching above; leaves ascending, rough on the upper surface, oblong-linear to linear or linear-lanceolate, acuminate, often curved, about 5-nerved, those on the stem 3–6 cm. long, 2–8 mm. broad; involucres long-peduncled, cylindric-campanulate, about 1 cm. long, 6 mm. in diameter; scales of the involucre imbricated in 4–6 rows, linear to linear-lanceolate, acuminate, prominently keeled, glabrous or sparsely pubescent with long loose hairs; rays broadly linear to oval, 7–9 mm. long, usually shortly toothed at the apex.

In the pine lands at Bellair, Leon Co., about four miles south of Tallahassee, No. 2545. Nearest to *C. falcata*, from which it is readily distinguished by its much larger involucres, pubescence, and range. *C. falcata* Ell. is confined to the coast from Massachusetts to New Jersey.

ERIOCARPUM MEGACEPHALUM n. sp.

Plant much branched, about one metre in height. Stem and branches pubescent with short villous hairs, striate; leaves sparsely pubescent, sessile, lanceolate to linear-oblong, 2–7 cm. in length, 5–20 mm. broad, coarsely and remotely serrate with curved spreading teeth; short peduncles very villous at the summit and bearing a single head 2–3 cm. in diameter; involucres about 1 cm. high, its scales short-hispid, acute, linear to linear-lanceolate, the outer ones slightly shorter than the inner; rays numerous linear to

linear-oblong, obtuse or acute, about 1 cm. long, 2–3.5 mm. broad.

Quite common on the south shore of Sneed's Island, near the mouth of the Manatee River, No. 2432.

PLUCHEA LONGIFOLIA n. sp.

Whole plant, particularly the inflorescence, pubescent with short villous hairs. Stem 6–10 dm. tall, branched at the summit; leaves crowded, erect or ascending, somewhat rough especially on or near the margins, denticulate or serrate, oblong or oval, those on the stem 6–16 cm. long, 2.5–5.5 cm. broad, the lower ones acute and sessile at the base, the upper ones truncate or rounded and slightly clasping at the base; inflorescence corymbiform, compact; involucres campanulate, 7–10 mm. long, exceeded by the slightly tawny pappus; scales of the involucre imbricated in 4–6 rows, ciliate, the outer ones broadly ovate and obtuse or apiculate, the innermost linear, acute.

Common in an open swamp just back of Titusville, Brevard Co., No. 2293. In the field the tawny white pappus makes the plant very conspicuous.

PLUCHEA IMBRICATA (Kearney) (*Pluchea foetida imbricata* Kearney). Further observation of this plant in the field convinces me that it is worthy of specific rank, and so I raise it to that distinction. It often attains a height of 1–2 metres, being much taller than *P. foetida*, which rarely exceeds 6 dm. in height. The color of the foliage is much different, giving the plant a purplish hue. In *P. foetida* the leaves are a dull green. The most marked difference between the two species lies in the time of flowering, *P. foetida* having matured its seed before *P. imbricata* is fairly in bud. There is a difference of some six weeks between the flowering periods.

Rudbeckia bupleuroides Shuttlw. Collected in the flatwoods at St. Marks, Wakulla Co., No. 2538. I visited this place early in September, a little too late to secure good specimens of this rare composite. By diligent search I managed to obtain about a dozen presentable plants. It grows in the swampy part of the flatwoods, in company with *Lacinaria spicata*, *Eryngium Ravenelii*, *and E. virgatum*.

Reviews.

Essentials of Vegetable Pharmacognosy. A Treatise on Structural Botany. Designed especially for Pharmaceutical and Medical Students, Pharmacists and Physicians. By Henry H. Rusby, M. D. and Smith Ely Jelliffe, M. D.

Pharmacognosy is that branch of pharmacology which treats of unprepared drugs. It is therefore comprehensive, including several sciences, specially botany and chemistry. The work before us takes up vegetable pharmacognosy, in other words, it is a botanical treatise clearly and intelligently displaying the relations of morphology and organography to the study of vegetable drugs. It consists of two parts: the first, by Prof. Rusby, on the gross structure of plants; the second, by Prof. Jelliffe, on their minute structure. Both parts have been carried out in a manner worthy of the high reputation of their authors. Prof. Rusby's extended original studies as a systematic botanist, together with his experience as a teacher, have made him not only familiar with the needs of students, but thoroughly fitted to supply them. His work will be profitably consulted by all interested in botany. It is inspired by the truly scientific and natural method, following the laws of development and logically bringing out the relations and homology of parts, a philosophical process which leads the author, for instance, to define the flower as "a reduced branch modified for the production of seeds," and to find in the leaf "all the elements which characterize primary stem structure." It is hardly necessary to add that it embodies, so far as the limits permit, all the latest advances of science, as specially made clear under the headings of fertilization, pollination, dissemination of fruit, etc. It contains only 100 closely printed pages, but omits nothing of interest and may be truly regarded as a model of condensation; seldom can so much assimilable information be found in the same space. In spite of the direct and lucid style of the author, such condensation might prove bewildering to the beginner were it not for the richness and excellence of illustration, an admirable feature of the work, so that there is hardly a definition without its appropriate cut. It should be mentioned that most of the illustrations have been taken from nature.

In subsequent editions I would suggest the freer use of capitalized and italicized terms to strike the eye and memory of students.

The second part by Prof. Jelliffe is, likewise, an excellent example of adaptation of means to an end, this end being the study of plant tissues with a view to their practical determination in drugs. The first chapter is given to microscopy. After treating of cells and their contents, the author describes the tissues, from a point of view both anatomical and physiological, as formative, protective, nutritive and reproductive. The last chapter is devoted to micro-chemical relations. This part, although of only 50 pages, is made by judicious condensation, to cover a large amount of clearly expressed, easily apprehended matter, made still more intelligible by the same profusion of excellent cuts.

A full alphabetical index of the whole work is a desideratum. V. H.

Remarques sur la Nomenclature Bryologique. Par Auguste Le Jolis. Mem. Soc. Sci. Nat. et Math. de Cherbourg, **29**: 229–328.

The author considers in detail the changes in the names of mosses originated by Lindberg, and since followed by Braithwaite and other bryologists. He believes that the majority of bryologists have been pained by the trouble and confusion which Lindberg has made in the meaning of the names consecrated by the best authors, by replacing names which had a universal usage, by those old and unknown ones, which are almost unintelligible except to the initiated. He says that "The protests which have been made against these changes have been attributed to the perturbation of previous habits and have not been discussed from the side of the principles involved." He discusses at some length the "Revisio generum plantarum" of Otto Kuntze, also the Laws of the Paris Congress of 1867, and then proceeds to a detailed explanation of the changes made by Lindberg in the nomenclature of the Mosses. He indulges in several sneers at his expense, implying that these changes were made for the sake of replacing the names of other authors by his own, and in many cases fails to give any conclusive reasons why the changes should not have been made; but he also shows, in several instances, that Lindberg made these changes on insufficient descriptions and poor characterizations. The follow-

ing is a list of the names to which he objects: *Sekra, Dorcadion, Astrophyllus, Sphaerocephalus, Webera, Lamprophyllum, Schistophyllum, Weissia, Georgia, Leersia, Mollia, Trichostomum, Stableria, Diaphanophyllum* and *Cyclodictyon.* He vents his spleen on Otto Kuntze for changing the application of *Hookeria* and reaches a climax of indignation by stating that 24 *Brodiaeas* transferred to *Hookeria* gave him that number of "nobis," 59 *Hookerias* transferred to *Cyclodictyon* added as many more, a small matter, however, after "306 OK.," which Dr. Kuntze seized by transferring *Selaginella* to *Lycopodioides.* "Le nobissime chronique degenere ici en nobisite aigue."

He makes his argument much more impressive by omitting the parenthetical citations, and attributing all changes to a desire for personal notoriety, rather than adherence to a fixed principle. He then proceeds to discuss changes in specific names, including the following: *Bartramia Norvegica, Breutelia chrysocoma, Bryum cernuum, Buxbaumia viridis, Camptothecium trichoides, Campylopus subulatus, Cryphaea arborea, Dicranella secunda, D. vaginalis, Dicranum schisti, Didymodon denudatus, Entodon palatinus, Grimmia ovalis, G. campestris, Hylocomium proliferum and H. palatinum, Hypnum elodes, Isothecium viviparum, Lesquereuxia filamentosa, Mnium serpyllifolium, Neckera fontinaloides, Oligotrichum incurvum, Phascum acaulon, Pterogonium ornithopodioides, Rhacomitrium aquaticum, R. hypnoides, Salaenia caesia, Seligeria setacea, Splachnum pedunculatum, Swartzia montana, Tetraplodon bryoides, Tortula mutica, Barbula acuta* and *Weisia Americana.* Judging from the remarks on page 303, which he attributes to "Mrs. Elis J. Britton," it is evident that M. Le Jolis has not followed up my subsequent notes on the question of *Orthotrichum Americanum* Beauv. and *U. Americana* Mitt. If he will consult the BULLETIN (21: 66–68, 1894), he will learn that I have since seen the types of both species, and have come to agree with Lindberg in believing that the name *O. Americanum* Beauv. antedated *U. Hutchinsiae* Smith by eight years, and that they are unquestionably the same species.

He finally considers the names of genera which exist in Bryology, but which should not be used, because they have been employed in other families. *Coelidium*, Reicht., 1855, should be replaced by that of Vogel, 1839, for a genus of the Leguminosae.

Cryptangium C. M., 1843, should fall on account of a homonym of Schrader's, used in the Cyperaceae, in 1842. *Cryptocarpus* C. M. is replaced by Austin's name for a genus of Hepatics. *Decodon* (C. M.) Broth. is antedated by a synonym, *Rhachithecium* Broth. and by a homonym of Gmelin, used for a genus of Lythraceae in 1791. *Lasia* P. B., 1805, is antedated by *Lasia* Lour., 1790, in the Aroideae, and should be replaced by *Forstromia*, Lindb., 1862. including *F. Ohioensis* (Sull.) Lindb. (*Leptodon trichomitrium* Mohr.) *Mniopsis* Mitt., 1860, is attended by two homonyms: one of Dumortier, in the Hepaticae; the other of Martius in the Podostemaceae.

Three genera of Phanerogams are displaced by homonyms in mosses. They are *Hedwigia* Swartz, 1788, Burseraceae, by *Hedwigia* Ehrh., 1781. *Sporledera* Bernh., 1842, Pedaliaceae, by *Sporledera*, Hampe, 1827. *Swartzia* Schreb., 1791, Leguminosae, by *Swartzia* Ehrh., 1787. A table of hononyms in Bryophyta and Spermatophyta is given, and a long list of works he has consulted. There is also a complete index. In many cases the original citations are quoted, which renders this criticism of particular value to those who cannot verify the original descriptions.

ELIZABETH G. BRITTON

Proceedings of the Club.

WEDNESDAY EVENING, FEBRUARY 26, 1896.

Vice-President Allen in the chair and 29 persons present.

Mr. C. D. Lippencott and Miss Amy Schüssler were elected active members.

The announced paper of the evening by Prof. Byron D. Halsted, "Economic Field Botany," was illustrated by numerous interesting lantern-slides.

A communication was read from Mr. Chas. H. Winston, of Richmond College, submitting a specimen of *Ligusticum Canadense*.

Dr. Britton made some remarks upon the separation of the Liliaceae, as usually understood, into four distinct families.

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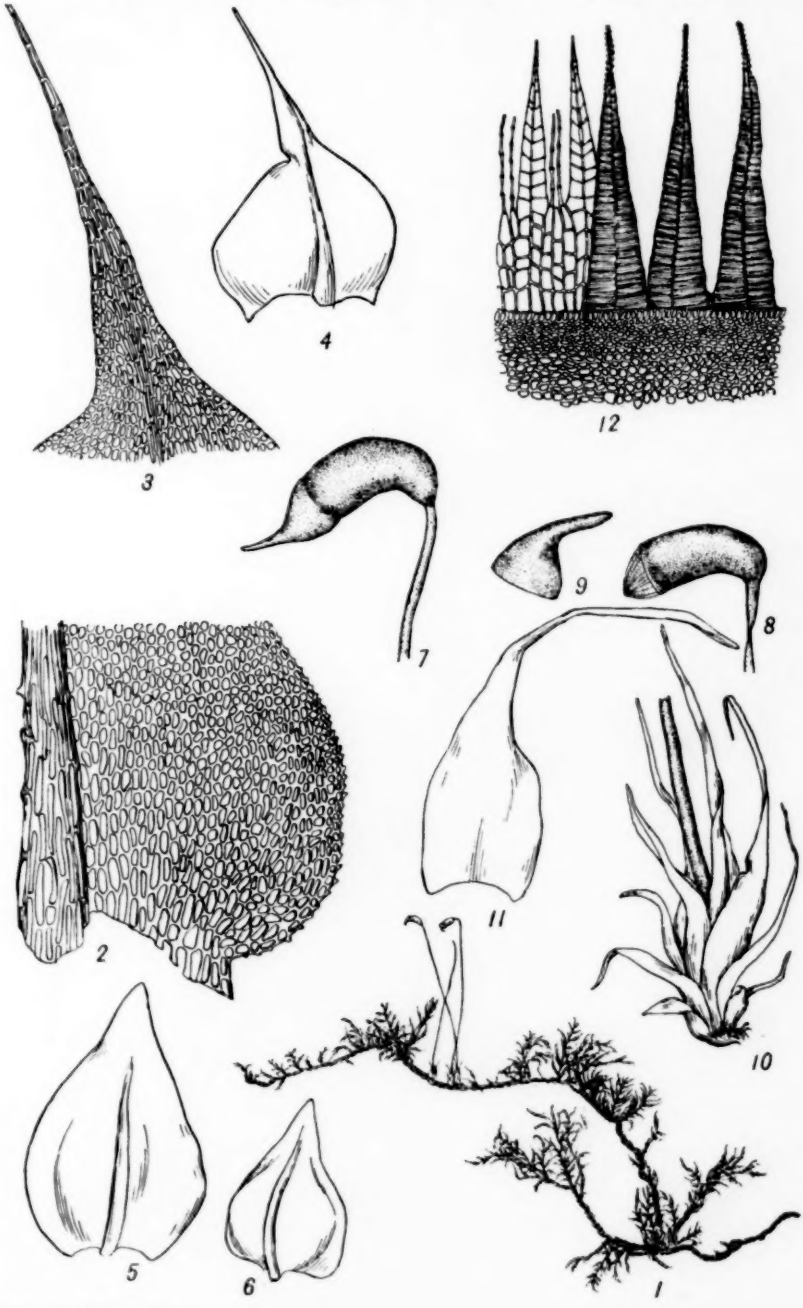

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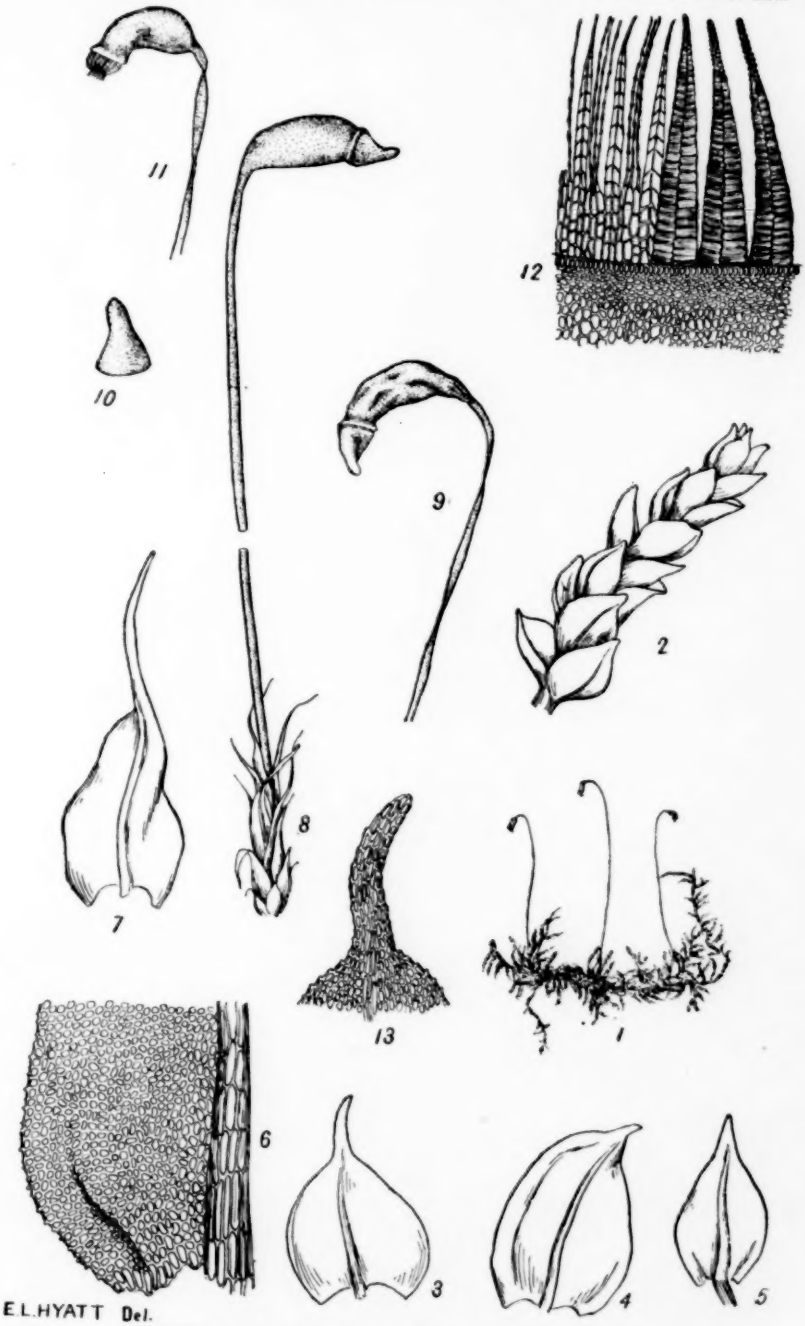

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